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No. XXI. OF VOL. II., 1927. **No. 5438. Vol. CCXIII.** LONDON, SATURDAY, NOVEMBER 19, 1927 Founded 1823. Registered as a Newspaper. Published Weekly. **Pp. 128—Price 1s.** Annual Subscription, Inland £2 2s. Abroad £2 10s.

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A Review
OF
PROSTATIC ENLARGEMENT.

Being the Bradshaw Lecture delivered on Nov. 10th, 1927, before the Royal College of Surgeons of England

BY SIR CUTHBERT WALLACE, K.C.M.G., C.B.,
VICE-PRESIDENT OF THE COLLEGE AND SURGEON TO ST. THOMAS'S HOSPITAL.

RECENT years have added but little to our knowledge of the function of the prostate. It is not apparent that it has any internal secretion, or that it exercises any influence on metabolism; it is a secondary sexual gland. The prostatic urethra above the entrance of the ejaculatory ducts is developed from the urinary or upper part of the genito-urinary sinus and corresponds with the female urethra; the part below springs from the lower part of the sinus and corresponds to the vestibule in the female. It is said that the gland tubules of the prostate correspond to Skene's tubules that are found in the female urethra. If this is the case the prostate, like the breast, seems to be an instance of the economy of Nature, for she has modified pre-existing structures to her purpose. In some animals, even in the male, the glands, though somewhat bunched together, remain separate structures; but in others (as in the dog) they are collected together and form a structure very similar to the human prostate. It is interesting that the dog has a prostate structurally very like that of his friend, the man, and like the man suffers from prostatic trouble in advanced years.

The glands that make up the prostate spring apparently from all sides of the urethra, but the anterior group ultimately atrophy. There has been some doubt as to whether the glands that lie in the midline above the ejaculatory ducts are budded off from the posterior surface of the urethra or whether the glandular elements met with in this position only represent the displaced distal extremities of the glands that spring from the sides of the urethra. This is not a very important point, but it is this gland mass that goes to make up the so-called third lobe, which has been credited with being the cause of most of the troubles that are connected with prostatic enlargement. The gland mass that lies below the ejaculatory ducts is seldom the seat of changes and usually retains its spongy nature. This gland mass is derived from the lower part of the genito-urinary sinus and has been said to have a separate blood-supply and to be at one period enclosed in a separate capsule.

Long before birth the prostate has assumed its adult form and the gland tubules the distribution that pertains throughout life. There is no indication of any division into lobes or lobules. The tubules run out from the side or posterior walls of the urethra towards the sides of the organ, tending to bend forward as the distance from the urethra increases. In front there is very little if any gland matter. This glandless area represents an atrophy of tubules, not a fusion of constituent lobules. None of the tubules of the gland reach the surface, thus leaving another non-glandular portion.

Lastly, there is always a considerable thickness of non-glandular tissue surrounding the urethral canal. Outside the gland proper lies the pelvic fascia, containing in front and at the sides the prostatic plexus, and behind lies the non-vascular fascia of Denonvillier. Above the prostate is intimately welded to the bladder, as one would expect, having regard to the method of development.

HISTORICAL.

It is possible to-day dispassionately to survey the history of prostatectomy. In the eighth edition of Erichsen's "Science and Art of Surgery," published in 1884, after describing various palliative procedures for enlargement of the prostate, the author continues:—

> "Various operative procedures have been recommended and practised by Mercier and others for the removal of the mechanical obstruction caused by the enlarged prostate, but they are both inefficient and dangerous and have been almost unanimously condemned. In fact, the sole treatment of enlarged prostate consists in the regular use of the catheter, and when once this treatment has been commenced it must be continued for the remainder of life."

In the next edition, published in 1888, the above statement again appears with the following addition:—

> "Lastly, within the last few months, F. McGill, of Leeds, and Socin, of Leipzig, have advocated the removal of the obstruction by suprapubic cystotomy . . . . he removes the projecting lobe with scissors and forceps or by enucleation with the fingers . . . . it seems hardly justifiable to submit him (the patient) to an operation the benefit of which is doubtful and which may prove fatal . . . . All his (McGill's) cases were undertaken on account of cystitis and other complications, but he suggests the possible extension of the operation to uncomplicated cases."

In 1886 Belfield, of Chicago, attacked the prostate by the suprapubic route.

The following paragraph from a lecture (1908) by our President carries on the history.

> "The first suprapubic prostatectomy done in England was performed on March 24th, 1887, by McGill. In that operation and in many subsequent ones he removed only a small portion of the prostate in one piece, or in many pieces, cutting away the projecting and obstructing parts of the gland with scissors. Later Mr. Jessop introduced his 'ring-scissors,' which made this piecemeal removal of the gland an easier matter. The first attempt at enucleating a portion of the prostate in Leeds was made on Dec. 15th, 1887, by Mr. Edward Atkinson. This was during my house surgeoncy, and I quite well remember the enthusiasm the genial operator had for the case, and the simplicity of this procedure. On Dec. 17th, 1887, Mr. McGill employed this method of enucleation; a portion of the prostate, weighing 2 oz. 40 gr. which surrounded the urethra laterally and below, was enucleated in one piece."

McGill's operations were evidently done in cases in which the general condition was extremely bad; from what he says, however, he was obviously looking forward to practising the operation in more favourable cases. Mayo Robson and Mansell Moullin followed the method of McGill. In 1888 Harrison was advocating perineal section and prostatectomy, more especially in those cases of foul urine and degenerated kidneys, and in this way seems to have laid the foundation of the present two-stage operation. In 1893 White, of Philadelphia, reviewed the whole situation and quoted statistics stating that the mortality of the perineal route was between 13 and 14 per cent. and that of the suprapubic between 20 and 25 per cent. It was with the idea of finding a safer method of relieving the patient that White suggested castration. In 1894 Fuller, of New York, performed an operation apparently identical with McGill's procedure. In this same year Nicoll, of Glasgow, and Alexander, of New York, were performing a prostatectomy of similar nature to McGill's, but by the perineal route. During these years there was considerable discussion as to where the obstructing growths lay—that is to say, whether they were intra- or extra-vesical and whether the perineal or transvesical route was the best.

From 1886 until the close of the century the operative treatment of enlarged prostate was undergoing a slow and painful evolution. A certain number of surgeons were practising an operation which was practically similar to the modern one, but they were faced with a heavy mortality and were unable to persuade the profession as a whole to follow their lead. The general feeling of the profession can be gauged by the eagerness with which the so-called sexual operations were taken up. In the late 'nineties the operation of prostatectomy was again making headway and the sexual operations, having been found wanting, were declining. In 1900, while the treatment of enlarged prostate was still chaotic, Freyer published his series of successful cases, which, anyhow

in this country, re-established prostatectomy as an operation of choice.

Since this time the suprapubic operation has found favour with most surgeons and the technique of its performance has remained in the main unaltered, but alterations and improvements have been put forward. The alterations introduced have consisted in the main of a more wide opening of the bladder with the idea of rendering the operation less blind and for a better hæmostasis. I believe that McGill made some attempt in this direction, and in 1907 Rutherford Morison advocated a wide transverse opening in the bladder, a full exposure of the internal meatus, and a removal of the obstruction under the eye. Of recent years this method has been again put forward and practised by Thomson-Walker in this country and by the Mayo Foundation in America. The perineal operation has, on the other hand, found some formidable advocates and appears at the present time to be gaining ground.

THE SEXUAL OPERATIONS.

The history of the sexual operations is interesting and instructive. Castration as a remedy for prostatic enlargement was suggested to White by the shrinking of uterine fibroids after ovariotomy, the uterus being considered a homologue of the prostate. To test his theory White got a friend to castrate adult dogs; they found that atrophy of the prostate quickly followed. In April, 1893, Fredrik, the Norwegian, had made the same observation and performed castration for prostatic enlargement. Later it was found that, in 1775, John Hunter made the classical observation on the want of development of the prostate that resulted from castration in youth or infancy. In 1889 Griffiths reported that atrophy of the prostate followed castration in the adult dog.

Treatment by castration, although put forward academically, was taken up with a rush, and like many new treatments was at first apparently efficacious. Even unilateral orchidectomy was reported to be efficient. In the course of time, however, it was found that castration had a very definite mortality and was said to cause dementia, even if it did not cause death. The literature of the period also shows that castration could not be relied upon to cause an atrophy of the enlarged prostate. Prof. Frederick Hobday, in his book on "Diseases of the Dog and Cat," quotes three instances out of a great number of cases where castration was practised with beneficent results for enlarged prostate in the dog.

Vasectomy was next proposed as a slighter operation, but one warranted to produce the same effect. It had a vogue, but gradually it also lost favour and with it the sexual operations ended. It was supposed to act by causing an atrophy of the testicle—that is, virtual castration—and thereby an atrophy of the prostate. It was suggested as an alternative to castration because some observer noticed that atrophy of the testicle followed section of the vas, when this was accidentally divided in the course of an operation for varicocele. Now this observation, though it led to the extensive practice of vasectomy, was erroneous. What really happened was that division of the vas cut off the last remaining blood-supply of the testicle; the testicle atrophied from lack of blood and not on account of the division of its duct.

Mr. Shattock and I did some experiments to find out the truth of this matter, and we found that, while cutting off the blood-supply caused an atrophy of the testicle, division of the duct left the testicle entirely intact. While in the midst of these experiments we found that John Hunter had made the observation in the human subject that the testicle developed and contained spermatozoa although there was no connexion between the testicle and its excretory canal. In 1825 Astley Cooper, using a dog, divided the vessels of the cord on one side and the vas on the other. The testicle whose vessels had been divided sloughed, but the organ with the divided vas slightly increased in size. In 1829 the dog was killed and the epididymis was found full of spermatozoa; the testicle was normal. The specimen, No. 4289, is in the Hunterian Museum. This experiment was repeated by Curling in 1842, by Gosselin in 1853, and more recently by Griffiths.

There are, therefore, in the above history two instances of knowledge acquired by experiment and then forgotten and buried, but rediscovered at a later period. In vasectomy, as practised for the relief of prostatic enlargement, we have an example of how careful one must be to verify the facts before applying them.

CAUSATION AND NATURE OF THE ENLARGEMENT.

Two theories as to the nature of prostatic enlargement have alternately held the premier place—namely, the infective and neoplastic. Nothing of interest in this connexion has come to light of recent years, except that Hugh Young, by a careful statistical inquiry, has shown that gonorrhœa, at all events, plays no part in the ætiology.

At present most people regard the enlargement as due to the growth of adenomata, and if this is accepted the cause of prostatic enlargement is the same as that of other such growths. In this association it may be useful briefly to allude to certain facts:—

1. The growths reproduce fairly faithfully the histological features of the parent, both as regards stroma and gland tissue.
2. Encapsulation is usually very complete, especially in old-standing cases.
3. Sometimes, however, the encapsulation is incomplete and recalls certain adenomata of the breast.
4. The growths are often compound, one adenoma comprising several small ones.
5. The time of appearance is late in life and this may have some connexion with
6. The proneness of the growths to become carcinomatous.
7. The statement of some observers that the alveoli of the growths maintain a connexion with the excretory ducts and can be injected from the urethra if suitable means are taken.

Point of Origin of the Adenoma[a].

There is still some difference of opinion as to the exact place in the gland at which these masses arise. One school maintains that they are not true prostatic tumours, but arise in the subcervical or in the glands of Albarran, both of which are submucous. It may be in certain cases that this is their point of origin, but in far the greater number the point of origin lies well within the prostate proper. Examination of a number of prostates about the age when the disease commences has shown that the white areas which are the first indication of change from the normal spongy prostate tissue lie a long way from the urethra, but gradually they enlarge and approximate that canal, and finally, when they come to operation, are only covered by a very thin layer of urethral mucous membrane. The adenomatous masses usually arise in connexion with the acini which enter the prostatic urethra above the mouths of the ejaculatory ducts; that portion of the gland which lies below seems but little prone to this change and often retains its normal spongy texture after the rest of the gland has undergone a complete change. It is interesting to note that the immune portion of the gland is apparently developed from those tubules which are connected with the lower part of the urogenital sinus and not with the urethra proper, and have been stated by some observers to be surrounded by a distinct fibrous coat in the early stage of their development and to have a separate blood-supply.

CAUSATION OF SYMPTOMS.

The symptoms must be of local origin, since bladder function returns to practically normal when the obstruction has been removed.

The symptoms can be discussed under the following heads: frequent micturition, precipitate micturition, hesitant micturition, dribbling after micturition, interrupted micturition, and residual urine.

Frequent and precipitate micturition may be explained by thinning and then replacement of the

contractile tissue about the internal meatus by the adenomatous growth.

Hesitant and interrupted micturition are more difficult of explanation. Hitherto they have been put down to the ball valve action of the "third lobe." Now a growth behind the urethra that could act in this way is a rarity, and I would suggest that these symptoms are caused somewhat in the following way. The urethra is surrounded by an adenomatous mass which is under tension caused by its growth stretching the pathological capsule. The urethra is also bent at an angle so that it forms a kind of flap valve. In order for urine to pass the pressure in the bladder has to be so adjusted that it can overcome the increased pressure within the urethra and at the same time be insufficient to shut the valve. Any departure from the optimum bladder pressure will cause a cessation of the flow of urine. The distressing symptom of dribbling from the urethra after the act of micturition should have been finished may be accounted for by the elongation, stretching, and distortion of the canal by the adenomata which have replaced the normal contractile tissue or hindered its orderly action.

Residual urine is most difficult of all symptoms to explain—in fact, it never has been explained. The most ingenious solution that has been offered is that which attributes it to the intravesical pressure on the varying cone-like projection of the prostate into the bladder. When the bladder is full the cone will project but little, but as the organ empties the cone will offer a greater surface that is subject to pressure, with the result that the urethra becomes occluded. Unfortunately for this explanation, a vesical cone is not always present.

I would suggest that residual urine is really a case of bladder posture. Fullness of the bladder is a relative term. The usual act of micturition, when once the initial stimulus of distension has been given, is a continuous one. In the process of emptying the bladder will contain from time to time an amount of urine which in process of filling had produced no desire for micturition. If the act of emptying is slow or interrupted, as it is in prostatic trouble, it is possible to imagine that the impulse necessary to carry the act to completion becomes dormant or fails to be again initiated; to speak in homely terms, the bladder imagines itself to be empty.

Fate of the Cavity left by Operation.

Even before the revival of prostatectomy in this country it was asserted by those who practised this operation that the procedure consisted in the total removal of the prostate. This assertion was reiterated in this country and given as an explanation of the success of the operation. This was fortunate, since it led to a proper appreciation of the morbid changes which are taking place in the gland. It is now, I think, admitted by most people that the modern operation for prostatic hypertrophy consists in enucleation of adenomatous masses from within the expanded outer portion of the organ, and that there is no real solution of continuity in this operation between the bladder and the urethra. That fact accounts in part for the almost unbelievable fact that this operation is very seldom followed by stricture. The process by which the healing of the urethra is brought about is worthy of a little consideration.

After the enucleation the urethra and bladder are joined by a ragged cavity, which may be at that moment of very considerable dimensions. Very soon after the removal of the adenomata, or rather at the very moment of their removal, the cavity contracts centripetally, so that not only are the sides of the cavity brought together, but the bladder is at the same time approximated to the urethra. This contraction is caused by the resilience of the remaining part of the prostate, and it may be remembered that it is this resilience pressing on the central adenomatous mass which is in part the cause of the urinary difficulties. This contraction at the time of operation is a very real thing and gives rise to considerable difficulty if the surgeon wishes visually to explore the cavity. After the operation the cavity continues to retract, so that in some cases within a few weeks a skiagram of the bladder shows no sign of its existence. Sometimes, however, a distinct cavity remains for a considerable period, though micturition is perfectly normal. It might be argued that the existence of this cavity shows that the internal sphincter is out of action. There is, however, another explanation. It is possible in those cases in which a cavity persists that the growth has been largely intravesical and that the top of the cavity corresponds not to the internal sphincter but to the level to which the mucous membrane of the bladder has been raised.

The contraction of the cavity may be looked upon as one of Nature's means of hæmostasis, and this consideration may raise some doubt as to the wisdom of habitually using a dilating device as a means of avoiding hæmorrhage. The retraction of the cavity is important in another direction, since it reduces the surface to be covered by epithelium.

When opportunity occurs of inspecting and digitally examining a bladder after a prostatectomy, it is remarkable how little abnormality is to be made out. Perhaps a small dimple at the internal meatus, or the meatus is not so dilatable as it normally is, and reminds one of the state of affairs in carcinoma or in the so-called "Mercier's bar." Again, it is almost impossible to be sure by rectal examination as to whether the prostate has been removed or not. Museum specimens of bladders after removal of the prostate are comparatively rare, and more are required for investigation; but the one in the Hunterian Museum, presented by Sir Rickman Godlee, shows very well what little distortion remains after operation.

The Two-stage Operation.

The two-stage operation was introduced quite early in the history of prostatectomy to rest the patient who was worn down by sepsis and want of sleep. The indications for its performance were at first almost entirely clinical.

The discovery and perfection of tests of urinary efficiency have extended and rendered more accurate the indications for the performance of this operation. It entails, however, certain disadvantages:—

1. There are two anæsthetics and two periods of anxiety and discomfort.
2. The enucleation is made more difficult by the shrinking of the bladder, the hardening and contraction of the prostate, and the induration of the abdominal wall. In addition the wound may become foul and phosphatic deposit give trouble.

If the two-stage operation is decided upon, the relative merits of catheter and suprapubic drainage are to be considered.

The catheter has been, with many surgeons, very successful; it avoids two operations, but it may give rise to a urethritis which is troublesome and in some cases to a definite rise in the blood-urea.

The suprapubic cystostomy has the great advantage that the condition of the prostate can be accurately determined by the only certain way—namely, that of bimanual examination.

Urinary Efficiency.—There are, of course, discrepancies between the various tests or parts of the same test, but in the main one is able to form a fairly just estimate as to the efficiency of the kidneys. But mention must be made of what is to me at all events a difficult problem. When is the surgeon justified in refusing to proceed to a second-stage prostatectomy?

There are a certain number of patients on whom a drainage cystostomy has been performed and whose urinary efficiency, as judged by the usual tests, has never fallen to a figure that would, in the first instance, have warranted a single stage prostatectomy, although in other ways they seem to be in good health. The question to be decided is this: What percentage of urinary efficiency is to be taken as justifying a completion of the operation after a period of drainage?

After-treatment.—I have nothing to say about this subject, except to express the opinion that whatever is the means favoured to carry off the urine after prostatectomy, the less the prostatic couch is interfered with the better. My cases have been very free from secondary hæmorrhage, and I attribute this to washing the bladder out only in exceptional circumstances.

BACK PRESSURE.

The mechanism whereby the loss of efficiency of the kidney is brought about is still unsolved. It is doubtful what effect the obstruction to outflow has on the constituents of the urine and what is the ultimate fate of a kidney whose duct has been completely occluded for varying periods. The rapid improvement that takes place in some cases after drainage of the bladder is mysterious. Perhaps the easiest explanation is that which attributes recoverable damage to vascular compression and not to histological change. It is usual to simply attribute the troubles of the kidney to "back pressure" and to leave it at that. When the subject is examined more carefully it is not so easy to understand how the kidney is subjected to an obstruction lasting over a long period.

It is not very obvious why we speak of back pressure in connexion with the kidney and do not use the term when we talk of obstruction in connexion with other ducts and the intestinal tube. It is an unfortunate expression, because it sometimes leads to the belief that the pressure which injures the kidney originates in the bladder as the result of tension or of muscular contraction. The pressure that dilates the ureter and destroys the kidney is the secretion pressure of the kidney, but it may be of interest to consider what are the pressures in the bladder that hinder the ureter in propelling the urine into the bladder; so long as the ureter can get rid of the urine, the kidney will be shielded from any noxious pressure.

I am indebted to Mr. B. W. Williams for the following observations incorporated in Table I.

TABLE I.—*Pressure in Bladder in Cases of Retention.*

Case No.	Duration of retention.	Bladder pressure in mm. mercury.	Amount of urine in ounces.	Case No.	Duration of retention.	Bladder pressure in mm. mercury.	Amount of urine in ounces.
1	36 hrs.	8–10	35	6	12 hrs.	34	46
2	7 days	23–25	85	7	24 ,,	27	50
3	48 hrs.	22–23	45	8	24 ,,	16	50
4	Overflow	19	20	9	22 ,,	8–10	36
5	3 days	29	42	10	24 ,,	24	40

They show the pressure in the bladder of some cases of retention. They were taken by means of a water gauge and have to be reduced to millimetres of mercury, as more readily appreciable. The pressures recorded are those found in the intervals between spasms of the bladder.

From this table it will be seen that the maximum pressure that the ureter has to overcome in a case of acute retention of urine is about 34 mm. of mercury. The pain occasioned at such a pressure is not to be endured; the individual is compelled to seek relief. From this it appears that any high pressure that may act injuriously on the kidney must be of very short duration.

In most cases, and even in cases with a considerable amount of residual urine, the pressure against which the ureter has to work must be very slight. In fact, it is difficult to see that the pressure in the bladder in most cases of residual urine can be greater than that which pertains in the ordinary course of filling of the bladder. It follows that there are three possibilities:—

(1) That the kidney is extremely sensitive to any obstruction, or

(2) That the damage done is in the nature of a sudden catastrophe (during an attack of retention), or

(3) That we must seek some unknown cause of kidney deterioration.

SUPRAPUBIC AND PERINEAL OPERATIONS COMPARED.

While the suprapubic method has been chosen by the great majority of surgeons, the perineal has been practised by surgeons of great repute and experience, one of whom has probably the lowest mortality of anyone. It is therefore useful to inquire if there is any cause for the majority to change their methods.

It is claimed that:—

1. The perineal is the more scientific, in that the enucleation is more deliberate and performed under the eye.
2. The ejaculatory ducts can be saved or ligated.
3. The urethral wall can be left intact.
4. The loss of blood is less.

To take these points one by one.

1. Some surgeons might say that by using a large vesical incision the enucleation can be carried out as openly and as deliberately by the suprapubic as by the perineal route. Putting this contention aside for the moment, it may be considered as to whether the enucleation under the eye is a material advantage. Removal of the adenomata is not a matter of delicate and difficult dissection, but really consists in entering a line of cleavage already established and following it to its conclusion. It therefore matters little whether this is done under the eye or not. An accurate judgment that all adenomata have been removed can be ascertained by bimanual examination when the suprapubic route has been used.

2. As regards the preservation of the ejaculatory ducts, if it could be shown that children had been born to patients who had undergone perineal prostatectomy it would be a point in favour of that operation, as a restoration ad integram is always desirable. I am unaware, however, that a man has ever begat a child after a prostatectomy. As regards a man's virility, apart from power of procreation, we have already seen that section of the vas produces no effect. It is not very clear as to whether the occurrence of epididymitis is caused or prevented by rupture of the vas. If opening the canal can cause an infection to spread to the epididymis, it cannot be denied that infection can occur with an intact vas or one in which the lumen has been obliterated by ligature after rupture. In the matter of the vasa, therefore, it does not seem that the perineal method has any advantage over the suprapubic operation.

3. My observations on many post-mortem and operative specimens have led me to doubt the possibility of leaving the urethral wall intact in any but a very small and insignificant number of cases, and I should not be influenced on that account in the choice of the operative route.

4. If excessive bleeding could be certainly and effectively diminished by the perineal route that would be a very good argument in favour of its adoption.

5. As regards restoration of function and absence of a persistent operative sinus, the suprapubic method leaves little to be desired.

Prof. Hans Wildbolz in a recent communication has advocated the use of the perineal method and the suture of the neck of the bladder and the distal portion of the prostatic urethra. He also states that the mortality of the operation is less than that of the suprapubic method, that the former method leads to a smaller rise in the blood-urea, and that sepsis is practically abolished, and that union takes place per primam. If other surgeons can reach the same results it will be a great argument in favour of the perineal method.

One fact in favour of the perineal route seems to be connected with the treatment of prostatic carcinoma. If this operation justifies its performance and if it is considered that the prostate can be best excited by this method, the more surgeons familiarise themselves with its technique the better.

Best Time for Operation.

It is fortunate that, although the adenomata may be multiple, they are usually all of an age, so that when they have necessitated operation their removal

is hardly ever followed by the formation of others. It should be the aim of the surgeon to remove the obstruction before the urinary function is depressed.

If the prostate is large and resilient and the life of the patient is disturbed by his trouble the decision to operate presents no difficulties. On the other hand, if the prostate presents no great departure from the normal and the patient is willing to put up with what discomfort he has, most surgeons would, I think, be willing to wait, provided the kidneys are efficient and the patient can be watched.

Some statistics that I will bring forward later seem to point to the fact that the mortality of prostatectomy (anyhow in hospital patients) will not be reduced until the cases present themselves for earlier treatment. More difficult are those cases in which the life of the patient is being somewhat disturbed by urinary troubles and examination per rectum shows a prostate perhaps a little large, but not much altered in shape or size. Such a case may prove to be a simple prostate which has not greatly enlarged or not enlarged toward the rectum, a case of carcinoma, or "prostatic bar." I know of no sure way in which the matter can be settled except by opening the bladder and a bimanual palpation.

It has been truly remarked that if an individual is destined to have trouble with his prostate he is lucky if the organ, so to speak, ripens quickly, about the age of 60. The kidneys will most probably be in good condition, a single-stage operation is possible, and there is a prospect of many years of health and enjoyment of life.

CARCINOMA.

Up to the present it cannot be said that the treatment of carcinoma has been satisfactory, either from the operative or radiation point of view. The operative treatment involves the entire removal of the gland. This is a difficult and tedious procedure. It has been accomplished, however, in a limited number of cases by the perineal and by the transpubic routes and the feasibility of a satisfactory union of the bladder and urethra demonstrated.

If the mechanical difficulties of removal have been got over, it cannot be said that the difficulties of diagnosis sufficiently early to justify a serious operation and offer a reasonable prospect of cure have been surmounted. Herein, to my mind, lies the crux of the question. The diagnosis of carcinoma is usually made on the hardness, the nodularity, the fixation of the prostate as felt per rectum, and the inelasticity of the internal meatus as felt from the bladder. By the time that the signs of malignant disease are irrefutable, as judged by a rectal or cystoscopic examination, the time of successful intervention is probably passed. The rigidity of the internal meatus, which is a useful sign, can only be ascertained after a suprapubic cystostomy, which is a distinct disadvantage if the prostate is to be excised by the perineal route. Again, there is the difficulty of diagnosing carcinoma from that undifferentiated group of affections that may be classed under the term "post-urethral bar."

Adenocarcinoma in its own way presents almost as great a difficulty to the surgeon. This condition may be diagnosed in the process of enucleation of a presumed adenomatous mass, or it may not be diagnosed until after a microscopic examination. Here the surgeon has three courses open to him:—

1. He can proceed forthwith to a total extirpation of the prostate, whose removal will have been made all the more difficult by the already accomplished operation.
2. He can wait and put the matter before his patient.
3. He can allow the bladder to close, if it will, and establish a suprapubic drain when obstruction supervenes, which usually happens within six months.

IRRADIATION.

This has been carried out from the urethra, from the rectum, by means of needles introduced through the perineum or through the bladder; deep therapy has also been used. Irradiation in the case of carcinoma of the prostate is in the same condition as irradiation for carcinoma in other parts of the body We are slowly and painfully groping our way towards a better knowledge. There are many groups of observers doing good and careful work throughout the country, but I cannot help wishing that someone who has the means would by his generosity render possible a more intensive study of the subject.

Prof. Sidney Russ, of the Middlesex Hospital, has kindly prepared for me Table II., which shows an estimate of the radium publicly owned in the countries named. The figures for the British Isles include the radium held by the London, Manchester and Glasgow institutes.

TABLE II.—*Estimates of Publicly-owned Radium (1927) for Medical Purposes.*

Country.	Population (millions).	Grammes of Radium.	Grammes per million of population.
France	40	18	0·45
Belgium	7·5	4	0·53
Denmark ..	3·3	2	0·59
Sweden	6	2·65	0·44
Germany.. ..	56	2	0·04
British Isles ..	45	11·5	0·25
Australia.. ..	6·2	10	1·60

MORTALITY.

It is extremely difficult to arrive at a just mortality of any operative measure. The mortality of operations in private practice is almost always better than that in hospital, owing to the different social classes from which the patients are taken.

I may give in the first place a few instances of figures given by individuals. In 1893 White, of Philadelphia, as we have seen, gave the mortality of the perineal route as between 13 and 14 per cent., and that of the suprapubic as 20 to 25 per cent. In 1912 Freyer gave the mortality in 1000 cases as 5½ per cent. and stated that in the last 100 cases it had fallen to 3 per cent. Hey Groves, commenting on these figures, said that he had taken the mortality for all the available large hospitals in the kingdom and found it to be 40 per cent. Hugh Lett, in 1913, said he believed that the mortality of hospital patients was 20 per cent. Fullerton stated in the same year that his mortality in 55 cases was 7·2 per cent.

Hugh Young, in his "Practice of Urology" (1927) gives his mortality for the perineal operation as 3·4 per cent. in 1049 cases, and Wildbolz just recently has stated that his mortality for the suprapubic method (105 cases) is 15 per cent. and for the perineal operation (305 cases) is 6·5 per cent. These figures show very real differences.

Through the courtesy of some surgeons I am able to show some figures from different hospitals which are a good guide as showing the results in one class of patients. (Table III.)

TABLE III.—*Mortality of Operations in Four London Hospitals.**

—	Total.	Died.	Mortality.	Individual mortality.
Enlarged prostate	831	131	15·8	13·1; 13·5; 17·8; 20·1
Prostatectomy	621	88	14·2	12·9; 14·5; 17·5; 20·8

* The figures are the last available.

An absolute mortality has a definite value, but a more satisfactory way is to contrast two sets of comparable statistics. This I can fortunately do. Mr. Max Page, in the Hospital Reports for 1910, published the results of prostatectomy at St. Thomas's Hospital and one can compare these with our more recent figures. (Table IV.)

It is at once apparent that the mortality from prostatic trouble has not materially fallen; that of prostatectomy has fallen from 20·2 per cent. to 14·5 per cent., but the total operative mortality has

somewhat risen. It will be seen that the surgeon has been more chary in performing the one-stage operation and that the deaths that formerly would have been recorded under prostatectomy are now to be found under cystostomy. If hospital statistics

TABLE IV.—*Mortality of Operations for Simple Enlarged Prostate.*

Treatment.	1906–1910. Total cases, 131. Died, 28.				1922–1926. Total cases, 219. Died, 44.					
	S.P. pros.		S.P. cyst.		S.P. cyst.		S.P. pros.			
							Two stage.		One stage.	
	T.	D.	T.	D.	T.	D.	T.	D.	T.	D.
	69	14	20	4	41	21	77	9	68	12
Method mort.	20·2		20·0		51·2		11·7		17·6	
Pros. mort.	20·2		—		—		14·5			
Total op. mort.	20·2				22·5					
Total mort.	21·7				20·1					

S.P., pros. = suprapubic prostatectomy. Cyst. = cystostomy. Op. mort. = operative mortality. T. = total; D. = died.

are to be improved, the patients must seek help earlier than hitherto. A striking fact is the good results that follow the two-stage operation in spite of certain disadvantages.

In conclusion, I think one may say that, whatever is the true mortality of prostatic enlargement, the outlook for the prostatic has improved out of recognition since 1886.

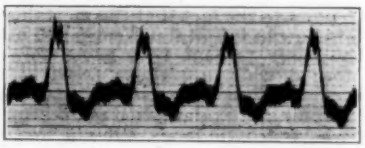
THE PACEMAKERS OF THE HEART.

BY JOHN COWAN, M.D. CAMB., D.SC., F.R.F.P.S. GLASG.,
PHYSICIAN TO THE ROYAL INFIRMARY, GLASGOW;
AND
GEOFFREY B. FLEMING, M.B.E., M.D. CAMB., F.R.F.P.S. GLASG.,
ASSISTANT PHYSICIAN TO THE ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW.

IN the healthy individual the rhythm of the heart is almost regular, though the rate varies from time to time with emotion, changes in position, exertion, fever, &c. The wave of contraction starts at the junction of the superior vena cava and the right auricle, flows over the auricles, and then spreads to the ventricles. There is, however, a difference in the course of the contraction in the auricles and in the ventricles. In the former the contraction starts at the sino-auricular node and spreads radially throughout the auricular muscle. In the latter the stimulus, reaching the auriculo-ventricular node, passes along the auriculo-ventricular bundle and its branches, from which it is distributed in an orderly way to the several parts of the ventricles. The electrical complexes of the auricular and the ventricular contractions are thus different. The auricular complex is a simple round-topped deflexion, the representative of a uniformly spreading contraction throughout the muscle. The ventricular complex, on the other hand, is composed of four deflexions, two of which are positive and two negative. These represent the peculiar orderly spread of the contraction to the several parts of the ventricles. The auricular complex is the same for everyone. The ventricular complex of the healthy individual, on the other hand, is characteristic, and continues even to the most minute detail from year to year. But if from any cause the normal pathway of the stimulus through the ventricular muscle is broken, the ventricular complex is at once altered, as, for example, in bundle branch block (Fig. 1), where the four deflexions are abolished, and replaced by two of wholly different form.

The rhythm of the normal heart, as judged by the finger or the ear, is quite regular, but if accurate measurements of tracings are taken the regularity is found to be but relative, as the pulse periods vary by fractions of a second. In many individuals, however, the apparent regularity of the pulse is interrupted from time to time by extrasystoles. These may arise in any part of the heart—the auricles, the ventricles, or the connecting pathway the auriculo-ventricular node, the bundle, and its branches. Usually they arise in some part of the primitive cardiac tissues.

FIG. 1.



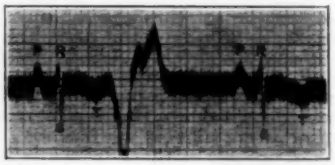
Bundle branch block. Lead I.

Extrasystoles.

Extrasystoles present special characters according to their site of origin. In Fig. 2 a ventricular extrasystole is shown. The first complex is practically normal, the auricular P being followed after an interval of normal length by R, S, and T. The second beat is premature, and quite different from the first. The initial deflexion is downward and its duration is longer than the R's of the first beat, while the second deflexion is in the opposite direction upwards. The irregularity on the upstroke of the second deflexion marks the occurrence of the auricular contraction. The third beat is normal, a replica of the first.

The abnormal character of the ventricular complex shows that the contraction originates in an abnormal site. The increased duration of the first deflexion shows that the stimulus is travelling through the muscle in an abnormal way. The large size of the T shows that the termination of the ventricular contraction is also abnormal. The beat is not merely premature; it is abnormal in its site of origin and in its mode of contraction, as well as in its rhythm. Such an abnormal complex has been shown experimentally to be due to the contraction arising in the left ventricle.

FIG. 2.



Ventricular extrasystole. Lead III.

In auricular extrasystoles, on the other hand (Fig. 3), the ventricular deflexions are normal and exactly similar to those which obtain with the regular rhythm. The fifth auricular complex is premature, but otherwise normal in character, as the stimulus always passes in a radial manner through the auricular muscle. As the stimulus is premature, conduction has not quite recovered from its last activity, and in consequence the P–R interval is longer than that of the normal beats. But as soon as the stimulus has traversed the auriculo-ventricular node and bundle it passes onward through the usual channels to the ventricular muscle, giving rise to a normal ventricular complex.

In nodal extrasystoles (Fig. 4) the ventricular complex is also normal, as the stimulus reaches the ventricle through the normal channels. The auricular complex is abnormal, a single deflexion but *inverted*,

showing that the stimulus, arising in the vicinity of the auriculo-ventricular junction, has passed *backwards* through the auricular muscle.

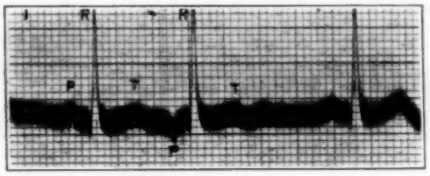
Paroxysmal Tachycardia.

In extrasystole when the dominant rhythm of the heart is normal, with the auricles and ventricles responding in sequence to stimuli which arise in the sino-auricular node, the dominance of that node may be interrupted from time to time by the occurrence of a contraction which originates in some other part of the heart. In some cases, however, the dominant rhythm may be abnormal, as the contractions of the heart are due to stimuli arising regularly in some other part than the sino-auricular node. This is well seen in paroxysmal tachycardia, which is really a series of extrasystoles continuing indefinitely. Any form of extrasystole, ventricular, auricular, or nodal, may be responsible.

In Fig. 5 all the complexes are similar and exactly the same as those of the ventricular extrasystole shown in Fig. 2. The tachycardia is ventricular in origin, all the beats originating in the left ventricle.

Fig. 6 shows an auricular tachycardia. The first two beats are of sinus origin, P regularly preceding Q, R, S. But the second S is followed by *two* positive deflexions,

FIG. 4.



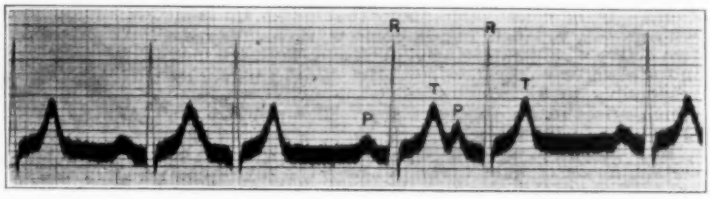
Nodal extrasystole. Lead II.

the second of which is evidently the normal T of the beat as it succeeds R after a interval of normal length. The first deflexion is then a premature P, which is followed after an unduly long interval by an R, which is appreciably smaller than those of the infrequent rhythm. The succeeding T's are all of large size and long duration, evidently the result of the fusion of T and P. (Such an occurrence can be seen in the second complex of Fig. 3 where the auricular contraction occurs so early that it is intermingled with the T of the preceding ventricular contraction, and not immediately after it, as in beat 5.) For the next 12 beats T and P remain inseparable, and the paroxysm then ends as abruptly as it began.

Fig. 7 shows a paroxysm of nodal tachycardia, P being inextricably fused with the ventricular complex, probably occurring synchronously with and deforming S. In Fig. 8 P is inverted and precedes R.

In all these three records the ventricular complex is similar to that of the infrequent rhythm, an indication that the stimulus is reaching the ventricle through the usual channels, bundle, branches, &c. The dominant rhythm of the heart may also be abnormal in cases

FIG. 3.



Auricular extrasystole.

where the rate of the contractions is not frequent. The infrequent nodal rhythm shown in Fig. 9 has normal ventricular complexes throughout which are exactly similar whether in response to a normal auricular contraction as in beat 1, or to those of the inverted P's in beats 3, 4. The change of pacemaker in this case is abrupt, though the rhythm and the rate of the cardiac contractions remain unaltered.

It is not always possible to distinguish between auricular and sinus rhythm if the rate is frequent. In auricular extrasystoles the form of the auricular deflexions is similar to that of sinus origin. If the rate is frequent the short duration of diastole causes a prolongation of the P–R interval, but if the rate is infrequent the increase may be imperceptible. Some of the cases of so-called juvenile irregularity, which are commonly ascribed to variations in the sinus rate, may perhaps be due to the occurrence of auricular extrasystoles.

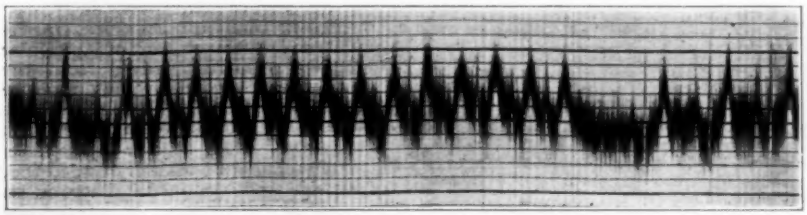
FIG. 5.

Ventricular tachycardia. Lead III.

Parasystole.

It is thus apparent that the cardiac contractions may be due to stimuli arising in various situations in the heart, in auricle, auriculo-ventricular node, or in the ventricle itself, as well as those which originate in the normal site, the sino-auricular node. A single abnormal beat may occur, or a series of beats which may continue indefinitely. The new pacemaker may produce either a frequent or an infrequent pulse-rate. The onset and the termination of the paroxysm are usually abrupt, but the alteration may occur without any change in either the rhythmicity or the rate of the pulse. A change in the rate of the pulse may be due to a change in the site of the pacemaker, as well as to alterations in the rate of production of stimuli at the sinus node. In the foregoing examples we have seen the functions of the normal pacemaker of the heart usurped by an abnormal pacemaker, either for the single beat of an isolated extrasystole, or for a series of beats. But it may happen that the normal pacemaker and an abnormal one function side by side.

FIG. 6.

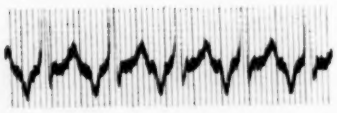


Auricular tachycardia. A premature auricular contraction occurs after two normal beats. This is the first of a series of stimuli of high frequency which throw the heart into a paroxysm of tachycardia.

The simplest example is full heart-block, blocking of the passage of the normal stimulus from the auricle to the ventricle. In this case the auricles respond to stimuli arising in the usual site, while the ventricles obey stimuli arising in the auriculo-ventricular bundle below the node. This is well shown in Fig. 10, where the auricles are pursuing a regular rhythm of 110 per minute, while the ventricles are unaffected by the auricular contractions, and contract at a slower rate, 44 per minute. It seems clear that in such cases *two* stimulus-producing foci are exciting cardiac contractions. It is conceivable, too, that even in cases without disturbance of conduction there may be two active stimulus-producing foci, and that each may initiate cardiac contractions, the heart sometimes responding to a normal stimulus, sometimes to one which arises in an abnormal site. This condition is known as "parasystole."

In 1912 one of us [1] suggested as an explanation of certain forms of allorrhythmia that "the rhythmical production of stimuli at an abnormally irritable point in the ventricles may produce rhythmic irregularities." It is to Kaufmann and Rothberger,[2 3 4 5] however, that we owe not only the term "parasystole," as they have named the condition, but an extremely thorough investigation of the subject, both clinically and experimentally. They bring forward strong evidence to show that most of the forms of allorrhythmia, due to abnormal stimuli arising either in the auricle or in the ventricle, can be explained by supposing that two pacemakers are regulating the heart's action at the same time; that both are coincidently building up stimuli; and that whenever either is ripe to initiate a cardiac contraction and finds the heart muscle responsive a contraction ensues which originates now in one place, now in the other. They suggest, indeed, that all extrasystoles may be parasystolic.

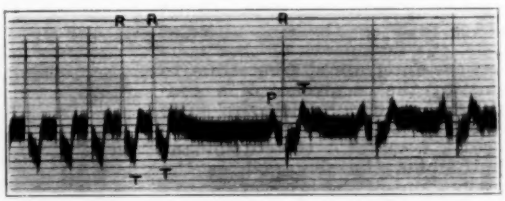
FIG. 8.



Nodal tachycardia. Lead II. (J. K. R.)

One serious objection to this hypothesis at once arises. Immediately after a cardiac contraction all the functions of the heart muscle (except tonicity) are in abeyance. If stimuli are forming at two centres (the physiological one and another) both would be abolished after each systole and would begin to develop once more during diastole. It is clear that in this case the one which developed fastest would control the cardiac rhythm, as the other would never have a chance of acting. It is possible that this is what occurs in paroxysmal tachycardia. To surmount this difficulty it is supposed that in parasystole the abnormal stimulus-producing centre is in some way protected from the destructive effect of the physiological contraction. In our earlier paper [1] on the subject we made the tentative suggestion that "the irritable focus lies in what may be called a backwater of the primitive cardiac tissue, and that while stimuli can stream down this backwater, physiological stimuli passing down the main channel are unable to disturb the point where ventricular stimuli arise." Kaufmann and Rothberger termed this "Schützblockierung," meaning that there is an uni-directional block which protects the abnormal irritable focus.

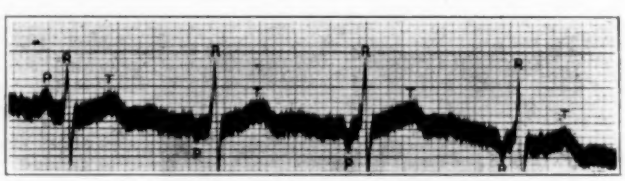
FIG. 7.



Nodal tachycardia. Termination of paroxysm. Lead II.

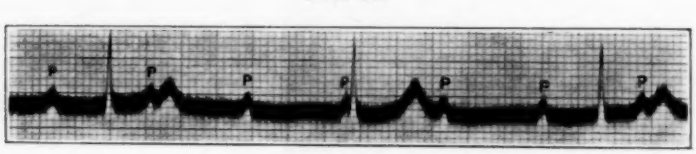
Many theories as to the causes of extrasystoles have been advanced. It is a commonplace that they may be induced by sudden emotion. They occur in acute and in chronic myocarditis. They are often produced by toxic agents such as tobacco, and Bourne [6] has suggested that in some cases a local anoxæmia, from some local narrowing of a coronary artery, may be their cause. Cowan and Ritchie [7] have argued that an undue distension of an auricular or a ventricular cavity may occasion an extrasystole. It has been shown experimentally that they may be produced by clamping the aorta or the pulmonary artery, the extrasystole arising in the left or the right ventricle according to the site of the clamp. In heart-block, both partial and complete, an extrasystole may occur if auricles and ventricles contract simultaneously. An auricular extrasystole not infrequently succeeds a ventricular extrasystole if in the former the auricular and the ventricular contractions coincide. Even an undue prolongation of diastole, with its accompanying over-distension of the cavities, may be followed by an extrasystole. Lewis [8] suggests that just as circus movements are the cause of auricular flutter, re-entrant waves from the preceding contraction may produce them. It seems probable that the cause of an extrasystole is not always the same.

FIG. 9.



Nodal rhythm; no change in rate. Lead II.

FIG. 10.



Full heart-block. Lead II.

The causes of allorrhythmia, too, are still undetermined. There is an essential difference between the various theories. Parasystole presupposes that the abnormal beats originate in the heart itself, independently of external influences. Cushny [9] has shown that this may occur in digitalis poisoning, the ventricles taking on a rhythm of their own, the rate of which increases until it approaches or exceeds that of the auricles. This is not the result of failure of conduction of the impulses from auricle to ventricle, for in that case the rate of the ventricles would be that seen in heart-block from other causes. It may, too, occur when the auricular rate is infrequent from

inhibition. The heart thus develops two rhythms: one, in the auricles, in response to impulses arising in the normal sinus pacemaker, the other, in the ventricles, in response to impulses arising within the ventricle itself, from an "increased spontaneity" of the ventricular muscle.

The other theories suggest that the abnormal beat is "forced," as Lewis calls it, by the preceding sinus

FIG. 11.

At first the heart is responding alternately to normal stimuli and to stimuli arising in the right ventricle, then alternately to stimuli arising in the normal site and in the left ventricle. In lead III. it is responding only to normal stimuli. (J. K. It.)

contraction, whether from variations in the strength or the duration of the stimulus, from variations in the duration of the cardiac diastole, or from variations in the intracardiac pressure. The most common form of allorrhythmia is a coupled rhythm, due to a regularly recurring extrasystole. This is most frequently ventricular in origin, though nodal and auricular forms occur. But there is nothing in a coupled rhythm to indicate the ultimate cause of its occurrence. This can only be elucidated by the investigation of the other forms of allorrhythmia.

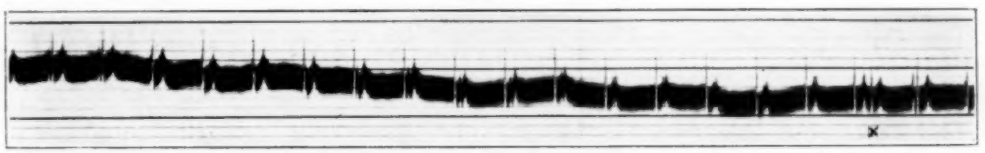
In the following examples parasystole seems to afford the most plausible explanation.

In Fig. 11 the ventricle is responding alternately to physiological stimuli, beats 1–3–5–7, and to abnormal stimuli arising in the right ventricle, beats 2–4–6. It seems probable that physiological stimuli are forming regularly at their usual site all the time, but fail with the alternate beats to produce a contraction because the extrasystole has already induced one, for in lead III., when the rhythm is regular, its rate is about double that of the physiological rhythm in lead I. Beat 8 is again an extrasystole, but this time arises in the left ventricle. The right ventricular extrasystole fails, as it is due to occur a little later (0·08″) after the physiological beat than the left ventricular contraction, and finds the heart already in contraction and so refractory. Notwithstanding the change in extrasystole, the rhythm of the physiological beats is unaltered, and beat 9 occurs punctually. The right ventricular extrasystole, which is again due, is again supplanted by an extrasystole arising in the left ventricle, and the new pacemaker during the succeeding beats alternates with the normal sino-auricular pacemaker, producing a coupled rhythm which is apparently similar to that of the first part of the tracing. It is, however, essentially different, for in the first part a right ventricular pacemaker, and in the second part a left ventricular pacemaker, causes the regularly recurring ectopic beats.

Fig. 12 shows a typical example of parasystole. There is complete auriculo-ventricular dissociation, the auricles beating slightly less frequently than the ventricles. At first the P deflexion precedes R, and then fuses with it. Later P emerges from R, and gradually approaches T, ultimately fusing with it. The next ventricular contraction is prematurе, though the deflexions are exactly similar to those of the preceding beats. It seems probable that this beat is a response to the preceding auricular contraction, of sinus origin, for the original ventricular rate is quickly resumed. The auricular stimulus has at last reached the ventricle at a time when it was capable of responding, and a contraction ensued.

Parasystole affords an explanation of some bewildering irregularities. In Fig. 13 a ventricular extrasystole is followed by a normal ventricular complex. There succeed three similar extrasystoles, each followed by a normal complex. The rhythm of the extrasystoles is irregular, while that of the normal beats is regular. The next extrasystole occurs somewhat late, and this time without any succeeding normal beat, the sinus contraction failing as it falls due at the time of the extrasystole. The extrasystoles continue till the end of the tracing, never affording the sinus pacemaker a chance of initiating a cardiac contraction. In this case, owing to a change in rate of the pathological pacemaker, the rôle of the normal pacemaker has been usurped by the pathological one.

FIG. 12.



The auricles and ventricles are beating independently. When the auricular stimulus occurs at a time when the ventricle is capable of responding to it a premature ventricular contraction occurs (X).

If two pacemakers can influence the rhythm of the heart concurrently, it seems probable that three, or even more, may sometimes be attempting to set the pace of the heart. In Fig. 12, as we have shown, three pacemakers are active, and even the most fantastic allorrhythmias may sometimes be explained by a comparable mechanism.

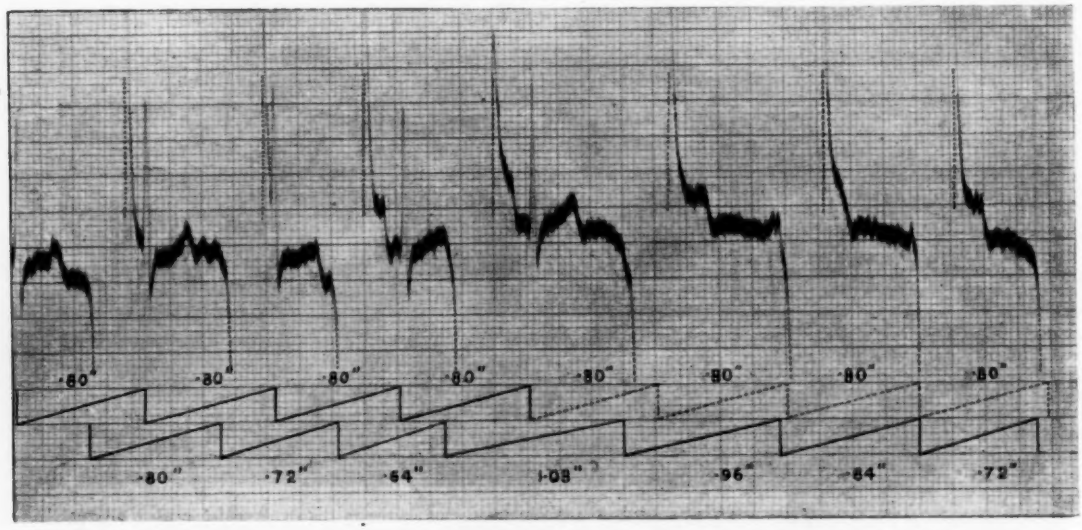
It has been contended that the long continuance of an allorrhythmia, as, for example, in coupled or triple rhythm which may continue for hours or even for days at a time, cannot be explained by parasystole,

because the small variations in the rate of the sinus contractions which so constantly occur would, sooner or later, cause the ectopic stimuli to fall within the period of a normal sinus beat, and so fail to produce a contraction. But if we believe that protective blocking is possible, and that a stimulus may remain "alive" for more than an instant of time, there is a margin during which the ectopic stimulus may produce a contraction. If this margin is exceeded the allorrhythmia ceases, but at other times the margin is sufficient to permit of the allorrhythmia continuing.

Such a condition is illustrated in Fig. 14. In this tracing the sinus rhythm is irregular, and in consequence there are occasions when regularly recurring ventricular stimuli cannot, at their onset, cause extrasystoles as the muscle is refractory. But, if the stimuli remain "alive" for more than a moment, contractions will occur when the muscle is again responsive, but at slightly irregular intervals.

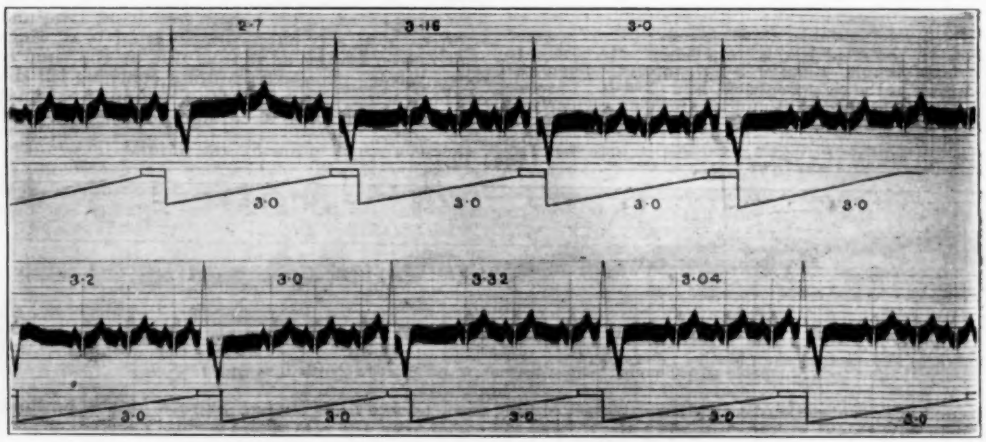
It seems probable that allorrhythmia may arise from several different causes. Glycosuria, dyspnœa, tachycardia, all own several causes, and the same is probably true of allorrhythmia. Re-entry, variations in intracardiac and intrathoracic pressures, nervous phenomena, may all, at times, play their part, but there are occasions when the most satisfactory explanation is that an abnormal pacemaker is interfering with the sinus rhythm. Sometimes the abnormal pacemaker dominates the rhythm completely (paroxysmal tachycardia); sometimes it can only occasionally interfere (extrasystole); sometimes two rhythms, that of the normal and that of an abnormal pacemaker, interplay with each other, and we have the heart "serving two masters."

FIG. 13.



At first extrasystoles are followed by normal contractions. Later, owing to change in rate of production of the abnormal stimulus, physiological contractions fail to occur.

FIG. 14.



Sinus stimulus production is irregular, varying from 0·7 to 0·9 seconds. Ventricular stimuli arise regularly at intervals of 3·0 seconds, and each remains alive for 0·4 seconds.

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SOME OBSERVATIONS ON THE MORTALITY FROM RHEUMATIC FEVER AND HEART DISEASE

IN LONDON.

BY MATTHEW YOUNG, M.D. GLASG.,
NATIONAL INSTITUTE FOR MEDICAL RESEARCH.

EVIDENCE has been adduced from the special study of series of cases of acute rheumatism by some observers, including Miller (1925), that the occurrence of this disease in children is closely associated with unfavourable conditions of life, though not apparently with extreme poverty. Benjamin (1927) concluded that rheumatism is a disease of poor people and that its incidence may well be in direct relation to the degree of poverty. Stevenson (1923) has also found that, in adult males, valvular disease of the heart, which in the great majority of cases is a sequel of rheumatic infection, is more fatal in the lower ranks of society. This finding is based on data for the several social groups tabulated by the Registrar-General for the biennium 1901–02. Nevertheless, further information on the relationship between social status with its environmental conditions and rheumatic infection and its sequelæ can be obtained by an investigation of the variations in mortality. The necessary data for the purpose were obtained from the recorded mortality for the metropolitan boroughs of London where it was possible to obtain approximate measures of varying social status with which to correlate the mortality; also to determine if the association were of a similar degree and kind in the two sexes.

Analysis of Data and Discussion.

Unfortunately it is only possible to obtain an approximate indication of the prevalence of acute rheumatism in the several metropolitan boroughs from the recorded mortality-rate. In the absence of any fairly extensive records of cases (of which there is no prospect in the immediate future), it is as difficult to refute as it is to support the view that there is a general parallelism between mortality and prevalence. For lack of any reliable evidence to the contrary it has been assumed that the death-rate does at least provide a rough index of the prevalence of the disease, and the relative incidence of acute rheumatism in the metropolitan boroughs in so far as it can be expressed by the standardised mortality-rates in persons at all ages for the decade 1911–20 is shown in Map I. The mortality is heaviest in Deptford, Stepney, Bermondsey, Wandsworth, Battersea, and Bethnal Green, all of which districts, except the last, are adjacent to the river Thames in part of their extent, but the rates are also relatively high in Hampstead, Islington, and Stoke Newington. The lowest mortality-rate occurs in Kensington, and relatively low rates are also found in Chelsea, Westminster, and Woolwich, as well as in St. Pancras and Camberwell. It is interesting to compare this map with that given by Shrubsall (1925), showing the distribution of cases of children suffering from acquired heart disease who were attending the L.C.C. special schools in 1925. His map indicates some aggregation of cases in the vicinity of the Thames and along the lines of the alluvial valleys marking the ancient courses of rivers. The comparison shows that, while relatively high death-rates are found in some districts in which there is evidence of a concentration of juvenile cases, there does not appear to be any striking coincidence in the two distributions.

If, as is generally supposed, a relatively unfavourable environment is an important predisposing factor in acute rheumatism, and if the mortality from the disease may be accepted as an index of its prevalence, then some indication of the influence of this factor might be expected in those boroughs in which the general social conditions vary considerably. Of the different criteria of varying social status that are available for the metropolitan areas, three have been selected—namely (1) the degree of overcrowding or the proportion of the population living more than two per room; (2) the proportion of domestic servants per 100 private families; and (3) the mean infantile mortality-rate. The correlation coefficients between the standardised mortality-rate from acute rheumatism in the metropolitan areas and these indices of social status are shown in Table I. The standard errors of the coefficients are

TABLE I.—*Showing the Correlations between the Standardised Rheumatic Fever Death-rate (S.D.R.) in Persons at all Ages in the Metropolitan Boroughs of London for the Decade 1911–20 and Various Indices of Social Status.*

Variables.	*r.*	
	Males.	Females.
S.D.R. rheumatic fever and index of overcrowding or proportion of population living more than two per room	0·080 ± 0·188	0·253 ± 0·177
S.D.R. rheumatic fever and mean infantile mortality-rate	0·312 ± 0·171	0·345 ± 0·166
S.D.R. rheumatic fever and proportion of domestic servants per 100 private families	−0·253 ± 0·178	−0·294 ± 0·173

such that little emphasis can be laid on the apparent existence of some slight association between the mortality from acute rheumatism and general exposure to unfavourable conditions of life seen in this table. It seems worthy of note that the proportion of overcrowding seems to be least closely associated with the rheumatic fever mortality-rate. Miller (1927) has come to the conclusion that overcrowding is not a factor of prime importance in the production of the disease in children from the fact that, although rheumatism is a disease of the poor, it is less common in the poorest than in the stratum above them.

Relationship of Rheumatic Fever to Heart Disease.

The relationship of the rheumatic fever mortality to the mortality from heart disease at the several ages in the different areas of London may now be examined. Various observers have tried to assess the proportion of fatal organic heart disease that may be described as primarily due to rheumatic infection. The estimates very considerably, but it has recently been suggested that there is a reasonable basis for the belief that at least half the total recorded mortality from heart disease is rheumatic in origin. In a recent report of the Ministry of Health, Dr. Glover (1927) has come to the conclusion that 40 per cent. is probably a safer figure. In London, in the five years' period 1921–25, 56 per cent. of the recorded mortality from heart disease in all its forms, and 44 per cent. of that registered as valvular disease of the heart, occurred at ages over 65. It is in this later period of life that degenerative or senile changes account for a relatively large proportion of the recorded mortality from heart disease, and it is also at these ages that heart disease is most often stated as a cause of death in an attempt to give a precise diagnosis to a terminal and often indefinite condition.

Although a fairly large proportion of the fatal heart disease in this later period of life is probably of rheumatic origin, the proportion at the earlier ages is undoubtedly considerably greater, and it is important therefore to compare the prevalence of acute rheumatism with the mortality from heart disease at these earlier ages. The index of regional rheumatic prevalence—i.e., the standardised mortality from rheumatic fever—has therefore been correlated with the mortality from heart disease in the separate sexes in certain age-groups for the two periods of years 1911–14 and 1919–25. The correlation coefficients are shown in Table II. For the period 1911–14, a small positive correlation is apparent

between the rheumatic fever death-rate and the death-rate from heart disease at ages under 15 and at ages 15–24, but for the other age-groups the coefficients are negative and insignificant. In females the coefficients are positive, but insignificant at all the ages. For the period 1919–25 the coefficients

TABLE II.—*Showing the Correlations between the Standardised Rheumatic Fever Death-rates in Persons at all Ages in the Metropolitan Boroughs of London for the Decade 1911–20 and the Mortality from Heart Disease at Different Ages in each of the Periods 1911–14 and 1919–25.*

Variables.	r.			
	Males.		Females.	
S.D.R. rheumatic fever and S.D.R. heart disease at ages—	1919–25.	1911–14.	1919–25.	1911–14.
Under 15 years ..	−0·079± 0·188	0·226± 0·179	0·118± 0·186	0·118± 0·186
15–24 years ..	0·200± 0·181	0·357± 0·165	0·446± 0·151	0·141± 0·185
25–44 „ ..	0·100± 0·187	−0·107± 0·187	0·405± 0·158	0·187± 0·182
45–64 „ ..	0·555± 0·131	−0·256± 0·177	0·264± 0·176	0·083± 0·188
65 years and upwards	0·023± 0·189	−0·258± 0·176	0·193± 0·182	0·028± 0·189
At all ages ..	0·134± 0·186	−0·150± 0·185	0·338± 0·167	0·102± 0·187

for all the age-groups in males and females are positive, except at ages under 15 years in males, but it is only at ages 45–64 in males and at ages 15–24 and 25–44 in females that they are of sufficient magnitude in comparison with their standard errors to indicate that any importance can be attached to them. It seems worthy of remark that the correlation between the rheumatic fever death-rate and the death-rate from heart disease at ages over 65 years is usually smaller than at the earlier ages, although little importance can be attached to this feature. The results in the table thus fail to indicate clearly that the mortality from heart disease at any particular age period is especially associated with the prevalence of rheumatism in the different areas.

Social Status and Heart Disease.

The relationship of social status to the mortality from heart disease at the different ages will now be examined and discussed. Correlation coefficients were calculated for the death-rates in the two periods 1911–14 and 1919–25 and the same three indices of the general level of the social condition of the residents in the metropolitan areas already described. In order to economise space the coefficients are not tabulated, but although certain anomalies occur, the results obtained from the three criteria appear to be in general agreement, and may be stated very briefly. The mortality from heart disease seems to be positively correlated with a relatively unfavourable environment, but the degree of association varies at different ages. At the ages 15–24, 25–44, and 45–64 the correlation is quite definite, varying from 0·5 to 0·8 in all the groups except that relating to the domestic servant index and male mortality, which will be referred to later. There is, however, fairly clear evidence that the mortality at ages exceeding 65 years has, as might be expected, no obvious relation to environmental conditions as measured by any of the criteria adopted. There is also a definite indication that in males the mortality at ages under 15 years in both periods is less closely associated with environmental conditions than is the mortality at the succeeding ages. The coefficients obtained from all three indices and the mortality in females under 15 years in the period 1911–14 suggest a like conclusion, but the coefficients for the period 1919–25 suggest that the association at ages under 15 years is nearly as intensive as at the higher ages. At the intermediate ages the correlation coefficients for females appear to be, on the whole, higher than the corresponding coefficients in males, but the differences do not appear to warrant the conclusion that the response to environmental conditions is more definite in females than in males. It is doubtless true that the female population is more continuously exposed to unfavourable home conditions, but any disadvantage in this respect is probably counterbalanced by the greater exposure of members of the male sex to strain and unfavourable conditions in their occupations. The correlation of the proportion of the domestic servants index and the male mortality at the different ages does not provide the regular series of coefficients shown for the remaining indices, but, if the size of the coefficients in this instance does not lend much support to the inferences drawn from the other indices, the general run of their signs at the intermediate ages may be said, at least, not to contradict them. The correlation between the social condition of the areas and the mortality from heart disease appears to be practically equivalent at the ages 15–24, 25–44, and 45–64, and generally more intensive than that between the mortality from rheumatic fever and the mortality from heart disease at any of the corresponding ages.

In previous papers (Young, 1921 and 1925) the writer has shown that the rheumatic fever mortality in the county divisions of England and Wales is positively correlated with the amount of rainfall and negatively with the mean temperature—in other words, is directly associated with the general prevalence of damp and cold. In the county areas the amount of organic heart disease is also definitely associated with the amount of rheumatic fever. The divisions of the metropolis, however, must be regarded as subject to considerably more uniform conditions of rainfall and temperature than the different areas of the country, and consequently it is not surprising that the mortality-rate from rheumatic fever shows somewhat less variation in the metropolitan areas than in the county areas, and that a less definite association between it and the incidence of heart disease appears to be present in the former than in the latter.

Conclusions.

Assuming the rheumatic fever mortality-rate to be an approximate index of rheumatic prevalence, there is a suggestion that the local incidence of the disease has a slight but direct relation to the social status of the metropolitan areas and shows a general tendency to be more common in the areas where the conditions of life are least favourable. The mortality from heart disease at the ages in which the great majority of the cases are undoubtedly rheumatic in origin shows apparently a still closer relationship than the prevalence of rheumatism to those environmental circumstances implied by difference in general social status. There is a suggestion that the mortality from cardiac disease in females is more closely related to environmental conditions than in males, but whether this is real or not, and, if real, whether it is attributable to a more continuous and prolonged exposure of the female population to deleterious influences in unhealthy homes, is a question on which it is difficult to hazard an opinion.

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THE FUNCTIONS OF THE LIVER

AS AFFECTED BY MALARIA INDUCED IN GENERAL PARALYTICS.

BY R. G. WILLIAMS, M.R.C.S. ENG.,

PATHOLOGIST TO THE HOSPITAL FOR THE INSANE, CLAREMONT, WESTERN AUSTRALIA; LATE ASSISTANT MEDICAL OFFICER, BEXLEY MENTAL HOSPITAL.

DURING last year laboratory tests were carried out at Bexley Mental Hospital with a view to investigating derangements of hepatic function occurring in the course of artificially induced malaria amongst general paralytics. The investigations comprised a series of lævulose tolerance curves, van den Bergh reactions, and some miscellaneous tests. In all, 107 lævulose tolerance curves were obtained from patients undergoing malarial treatment, and 17 curves from patients with proved or suspected hepatic derangements due to other causes.

Results with Lævulose Tolerance Curves.

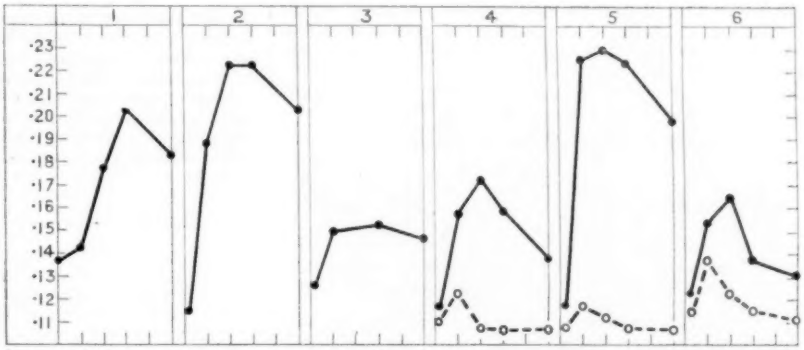
The lævulose tolerance curves were obtained in the following way:—

A fasting blood-sugar specimen was taken at about 9 A.M. and then 40 g. of lævulose in 8 oz. of water given by mouth. Blood-sugar specimens were then collected ½ hour, 1 hour, 1½ hours, and 2½ hours after the lævulose feed. It was found inconvenient (and unnecessary for the determination of a representative curve) to collect a specimen two hours after the feed, though for some of the curves the two-hour specimen was collected. The analyses were done in the afternoon or evening, and the Folin-Calvert colorimetric method was used throughout.

Lævulose tolerance curves were done on patients: (*a*) before inoculation with malaria either by mosquito bite or blood inoculation; (*b*) during the course of the malaria; (*c*) after recovery from malaria; (*d*) during and after malarial relapses; and (*e*) suspected of gross liver disease.

The cases investigated were: (*a*) sixteen general paralytics, who were given malarial treatment; (*b*) one tabetic, who was given malarial treatment; (*c*) four cases of gross liver disease (comprising two of cirrhosis, one of acute yellow atrophy, and one of secondary malignant growths); and (*d*) six general paralytics, who were not given malaria (controls).

FIG. 1.



Shows six curves. Nos. 1 and 2 were taken from the same patient, one with severe cirrhosis of the liver; the condition was confirmed at autopsy a few days after the date of the last curve. No. 3 was taken from another case of cirrhosis of the liver, also confirmed at autopsy. Nos. 4, 5, and 6 were from three cases of G.P.I. towards the end of their malarial treatment. No. 4 curve was taken from a patient on the 13th day of the infection after five significant temperatures over 103° F. No. 5 curve was taken from a patient on the 21st day of the infection after ten significant temperatures over 103°. No. 6 curve was taken from a patient on the 17th day of the infection after nine significant temperatures over 103°. The dotted lines are curves taken from patients before commencement of malarial treatment.

In every malarial case before the end of the treatment the curves were of the type indicating some hepatic insufficiency, and in many cases the curves became abnormal after the first or second rigors. In a few cases the curves indicated extreme hepatic insufficiency, and such patients remained critically ill for some days after the malaria was stopped by the administration of quinine. One such case died eight days after the malaria had been stopped. At autopsy there was found (in addition to a terminal broncho-pneumonia) an acute yellow atrophy of the liver. It was the occurrence of this condition in two previous fatal cases which led to the present investigations.

In most cases the curves became normal soon after the malaria had ceased, but in some of the more serious cases of apparent hepatic insufficiency, as demonstrated by the curves, the return to normal was

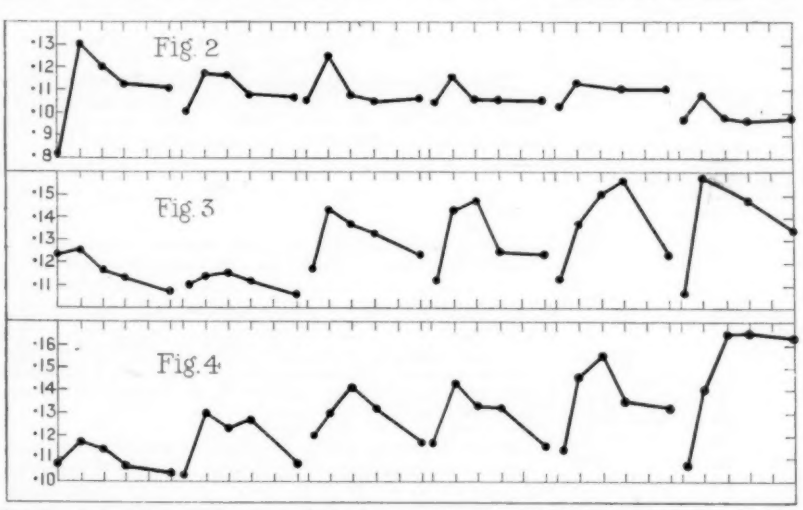


FIG. 2.—Series of curves from a patient who was bitten by malarial mosquitoes after the first curve had been taken, but who did not develop malaria. Curves were taken on the 3rd, 5th, 7th, 9th, 13th, 15th, 20th, 24th, and 34th days after the unsuccessful attempt at infection. It is unnecessary to reproduce more than six of these curves as they show no appreciable variation.

FIG. 3.—Series of curves taken from the same patient three months later. He was again bitten by malarial mosquitoes and curves taken on the 4th 9th, 18th, 21st, 25th, and 29th days after infection. He developed his first significant temperature on the 15th day and had in all 11 such temperatures. Quinine was given on the 26th day.

FIG. 4.—Series of curves in a typical case taken on the day before infection and then on the 7th, 12th, 17th, 22nd, and 29th days. The patient developed his first significant temperature on the 11th day and in all had eight significant temperatures. Quinine treatment was commenced on the 23rd day.

much slower. In four cases who had relapses some time after their period of treatment, marked hepatic insufficiency was indicated by curves taken during the relapses. The curves obtained from patients with gross liver disease were comparable with those in the malarial series (see curves). The case with secondary carcinomatous deposits in the liver showed a normal curve, there being sufficient liver tissue to deal with 40 g. of lævulose.

It is scarcely necessary to tabulate all the curves obtained in these investigations, as Figs. 1, 2, 3, and 4 are sufficiently representative. Fig. 1 shows the similarity between curves obtained in gross organic disease of the liver (curves 1, 2, and 3) and curves obtained towards the end of malarial treatment (curves 4, 5, and 6). The later curves also allow of comparison with the pre-malarial curves in the same patients. Fig. 2 serves as a control, being a series of curves in patient not infected with malaria. Fig. 3 shows a series of curves obtained from the same patient while undergoing malarial treatment. Fig. 4 shows a series of curves obtained in a typical case of therapeutic malaria in a G.P.I.

Results with van den Bergh Reactions.

Van den Bergh reactions were done on several of the cases. As, however, the results did not appear to be as sensitive as those obtained with the lævulose tolerance curves, and as 5 c.cm. to 8 c.cm. of blood were required for each test (possibly too large an amount to take frequently from an anæmic and toxic patient), the van den Bergh reaction was not done throughout the series.

It is of interest to note that almost every case in the series developed conjunctival icterus towards the end of the malaria, while several of the patients had appreciable jaundice.

In the few cases (three) in which the van den Bergh reaction was done before the inoculation of malaria the reaction was negative. Eight tests were done on patients during their malarial period, and in each case the reaction was either an indirect positive or biphasic one. The biphasic reaction was present in those patients who had appreciable jaundice.

Dr. R. Armstrong, of Bexley Mental Hospital, kindly undertook to do some van den Bergh reactions on general paralytics undergoing malarial treatment, with the following interesting results :—

Patient.	Before inoc.	After 3 rigors.	One week after malaria had stopped.
A	Di.	—	—
	I.	2·5 units.	1·75 units.
B	Di.	—	—
	I.	3·5 units.	2·5 units.
C	Di.	—	—
	I.	4·5 units.	Died after 5 rigors.*
D	Di.	—	—
	I.	2·5 units.	1 unit.
E	Di.	—	—
	I.	4 units.	1·5 units.
F	Di.	—	No malarial infection developed.
	I.	—	—

Di. = Direct ; I. = Indirect.
* The liver and kidneys showed fatty changes.

Tests for the antitoxic function of the liver were carried out, but satisfactory results were not obtained. Sodium salicylate was given by mouth and the urine then examined for conjugated glycuronates by Tollen's method. The failure was largely due to the difficulty of obtaining representative (24 or 12 hour) specimens of urine from the patients and from suitable controls. Urobilin was found in marked excess in the urine of most of the patients while they were having malarial treatment. This test, however, was not done systematically, and the exact numbers have not been recorded.

Tests on General Paralytics Treated with Therapeutic Relapsing Fever.

In addition to these investigations similar tests have subsequently been carried out on seven general paralytics who were given relapsing fever for therapeutic purposes. (The patients were injected with emulsions of blood containing the spirochæte of West African relapsing fever, *Spiroschaudinia duttoni*.) In none of these cases did the curves indicate marked hepatic defect. One case was followed throughout his treatment and the following curves were obtained.

—	Fasting.	Hours.				
		½	1	1½	2	2½
(*a*)	0·107	0·113	0·101	0·101	—	0·096
(*b*)	0·104	0·135	0·127	0·124	—	0·108
(*c*)	0·102	0·138	0·134	0·117	—	0·113
(*d*)	0·105	0·134	0·122	0·109	—	0·093
(*e*)	0·101	0·124	0·123	0·113	—	0·103
(*f*)	0·096	0·119	0·118	0·101	—	0·095

Curves (*b*), (*c*) and (*d*) indicate slight impairment of liver function, but the later curves (*e*) and (*f*), taken after the patient had had three prolonged spells of fever, are within normal limits.

Another case, at the conclusion of four periods of high fever, showed Curve 1 in the following table, while another showed Curve 2 after three fevers and Curve 3 after four fevers.

Curve.	Fasting.	Hours.				
		½	1	1½	2	2½
1	0·088	0·115	0·112	0·105	—	0·090
2	0·103	0·116	0·119	0·120	—	0·103
3	0·109	0·120	0·122	0·119	—	0·108

These curves, if they show any defect at all, show it to be incomparably less than was found in the malarial patients.

Three of the relapsing fever cases showed, at some time in their treatment, very faintly positive indirect van den Bergh reactions. Tests in the other cases were entirely negative. Urobilin and urobilinogen were not found in pathological excess in any of the urines examined.

It was possible to perform these tests through the kindness of Dr. F. L. Golla, and the medical superintendent and Dr. W. A. Caldwell, of Banstead Mental Hospital.

Tests with General Paralytics on Arsenical Treatment.

Thirteen general paralytics or tabetics who were receiving intensive intravenous arsenical medication were examined by these tests. Only one of these cases showed a defective lævulose curve—viz. :—

Fasting.	Hours.				
	½	1	1½	2	2½
0·108	0·140	0·142	0·135	—	0·115

This case had a positive indirect van den Bergh equivalent to 8 units of bilirubin in the serum. He had been slightly jaundiced some months before the tests were done. This case, with others, was examined owing to the kindness of Dr. V. E. Lloyd, of Guy's Hospital.

Tests on Cases of Lobar Pneumonia and Septicæmia.

Lævulose tolerance curves and urinary examinations were done on three cases of lobar pneumonia and one severe septicæmia. From the pneumonic cases almost normal curves A, B, and C were obtained, as shown in the table below.

The septicæmic case upon whom two curves were done was critically ill for three weeks ; she had many rigors each day, and eventually died. Permission for an autopsy was refused. Her curves are given below, D and E. They show marked liver defect. Urobilin and urobilinogen were present in pathological excess in the urine only in the septicæmic case.

These cases were examined through the kindness of the medical superintendent and Dr. Norcliffe Roberts, of St. Giles's Hospital, Camberwell.

—	—	Fasting.	Hours.			
			½	1	1½	2½
A	5th day of pyrexia .	0·104	0·134	0·117	0·115	0·107
B	9th day of pyrexia .	0·111	0·128	0·123	0·117	0·112
C	Day after crisis .	0·096	0·127	0·125	0·107	0·103
D	—	0·100	0·142	0·136	0·133	0·123
E	—	0·111	0·139	0·156	0·143	0·133

Conclusions.

The conclusions which may be drawn from these investigations are: (1) Lævulose tolerance curves, especially when done in series, are satisfactory tests for detecting and estimating liver derangement. (2) The van den Bergh reaction and tests for urobilin and urobilinogen in the urine help to confirm the results obtained from lævulose tolerance curves. (3) The tests reported in this paper indicate that the liver is much more severely affected in malaria than it is in the other conditions which were investigated. (4) Lævulose tolerance curves are useful for controlling therapeutic malaria.

No attempt has been made to discuss the history of the lævulose tolerance test, because the test is now so well established as to make such a proceeding quite unnecessary. No mention is made of the effect of the malaria upon the patients' mental condition, as such observations would be beyond the scope of this communication. The malaria used was a pure benign tertian strain obtained from Colonel S. P. James's laboratory at Horton Mental Hospital.

My thanks are due to the medical superintendent for permission to publish these results, to Dr. John Brander for his advice and assistance, to the assistant medical officers of Bexley Mental Hospital for permission to examine their cases, to Messrs. Lawford, Smith, and Cliffe for their help in the collection of specimens, and to Dr. F. L. Golla and Captain S. A. Mann for their advice and guidance.

Clinical and Laboratory Notes.

A CASE OF ASTHMA.

BY DAVID PERK, M.B., CH.B. LEEDS,
ASSISTANT MEDICAL OFFICER, WEST RIDING MENTAL HOSPITAL.

ASTHMATIC attacks are associated with a number of morbid conditions, two of which coexist in the case here described.

The patient was admitted to the West Riding Mental Hospital 26 years ago suffering from insanity with epilepsy, and became physically feebler and more and more demented with advance in years. Her history was uneventful until 20 months before her death, at the age of 65, when one night she had an attack of "asthma," during which she was markedly dyspnœic and cyanosed. Her pulse was weak and irregular; her heart sounds faint and irregular, and there was a systolic bruit in the mitral area. During the following months she had frequent similar attacks, each attack lasting intermittently for two days.

Post mortem, in addition to marked pathological changes in the heart, the entire left lobe of the thyroid was found to be replaced by a tumour which must have exerted considerable pressure on the larynx and trachea during life. The heart weighed 180 g., and was much contracted. The surface was wrinkled, and the coronary arteries were very tortuous. There were atrophic changes in the left ventricle produced by an extreme degree of mitral stenosis. The cavity was greatly diminished, the papillary muscles were much shrunken, the mitral valves were united to form a buttonhole orifice which led into a funnel, formed by the fusion of the upper ends of the chordæ tendineæ. Microscopically, the muscle-fibres were shrunken, and contained an excessive amount of yellowish granular pigment.

The thyroid tumour extended from the laryngeal prominence to the upper border of the manubrium sterni and clavicle. It pressed against the lateral surface of the larynx and upper rings of the trachea, arching them towards the right side, and almost occluding the lumen, so that this portion of larynx and trachea was distorted into the shape of a scimitar. The common carotid artery was arched outwards by the tumour, which measured 3½ in. by 2½ in., and weighed, when shelled from its fibro-muscular capsule, 130 g. It was roughly spherical and crudely and irregularly lobulated, with a smooth, shiny surface of sea-blue tint, interrupted in places by blood-vessels and white connective tissue bands. It contained a core of calcified fibrous tissue and some gelatinous fluid which coagulated very readily. Minute jelly-like particles, which dissolved on pressure, were suspended in the fluid. They were of a mucinoid nature, and stained well with Bismarck-brown.

A.—Solid portion of tumour; complex adenoma.
B.—Cystic portion of tumour; cystic adenoma.

The cut surface shows that the tumour is composed of two portions, a cystic and a solid portion. The roughly spherical solid lobule had no connexion with the rest of the tumour, and was merely enclosed by a continuation of the capsule surrounding the latter; on section it had a faintly whorled appearance. Embedded in its surface, beneath the capsule, were some plaques of calcareous material.

Microscopically, it resembled a complex adenoma, part of it exhibiting the features of a fœtal type, and part of it those of an adult type of adenoma. The fibrous tissue stroma showed extensive calcareous deposition.

The cystic portion was traversed by glistening strands of fibrous tissue of irregular widths and directions, which divided it into numerous loculi filled with a multi-coloured jelly-like substance. The fibrous network was in many places calcareous, and in a pocket of the capsule there was a deposit of heterotopic bone, in the shape of an incisor tooth, about half an inch in length.

Microscopically, the loculi which contained colloid material were lined by a single layer of cubical epithelium, with a tendency to proliferate freely. This caused a duplication or multiplication of the lining layer, and in many places a heaping up of the cells, some of which were embryonic or degenerate in type, ovoid or flattened. Stained sections of the tooth-shaped structure showed the presence of lacunæ and canaliculi arranged in Haversian systems.

It would appear, therefore, that the "asthma" may have been either (*a*) an expression of failure of cardiac compensation, as is strongly suggested by the post-mortem findings in the heart, supported by the history of cyanosis and cardiac irregularity accompanying the paroxysms of dyspnœa, and a systolic mitral bruit; or (*b*) a pressure-symptom of the thyroid tumour. Severe pressure on the larynx and trachea, or on the recurrent laryngeal nerve, might have produced the attacks of dyspnœa and cyanosis, while pressure on the vagus nerve would explain the irregularity of the heart associated with the attacks.

My thanks are due to Prof. M. J. Stewart for his kind advice, and to Dr. S. Edgerley, the medical superintendent, for permission to publish the notes.

TWO CASES OF NEURINOMA.

BY J. HARGREAVES ROBINSON, L.A.H. DUB., L.M.R.C.P. IREL.,
HON. SURGEON, ROYAL MATERNITY CHARITY, LONDON.

THE two cases here described fall into that heterogeneous group of conditions known as "neurinomata." The first one is a typical example of neurofibromatosis as described by von Recklinghausen; the second had a neoplasm, suggesting the condition called by Mott "pachydermatocele."

CASE 1.—A man, aged 31, noticed at the age of 17 two small nodular swellings in the course of the intermediate cutaneous nerve sheath. Three years later he noticed more swellings. He now has many neurinomata scattered profusely in the sheaths of the cutaneous branches of the posterior divisions of the spinal nerves, which are most numerous and largest in size in the lumbar region. He has 465 moles scattered about the body, most prevalent on the arms, in the axillæ, and on the scrotum and chest. He states that he has always been healthy, and is a non-smoker and total abstainer. His medical history records benign tertian malaria, phlebotomus fever, and an *Entamœba histolytica* infection. The patellar reflex is ±++ slightly more marked on one side than on the other. His fingers are tremulous, and muscular fibrillation of a facial muscle was noticed during examination. There are slight alterations in epicritic and protopathic sensibility. Mentally he could not be classed as a typical normal individual, but would be described by the alienist as of the mattoid type. He admits, after an obvious mental effort, that what he describes as "night starts" occur just at the moment when he is falling to sleep. He gives the impression of making a special effort to answer a simple question.

Inguinal swelling in Case 2.

CASE 2.—A healthy young man first noticed during the year 1919 a swelling on the lower part of the abdomen. He states that it has very slowly progressed in size, and has never been painful, even on pressure, but that friction against the clothing has been rather uncomfortable. He has never noticed any other swellings anywhere on his body, and does not know of any other member of his family having had anything of the kind. During conversation he gives the impression that attention and conation are rather more marked than usual, and he speaks rather slowly. On the lower surface of the abdomen there is a large, sessile, cutaneous neoplasm, slightly pendulous, and freely movable on the aponeurosis, excepting at a small area towards the inner border where movement is not so free. The neoplasm is firm in texture, insensitive to pressure, and clinically suggestive of the pachydermatocele of Mott. The inguinal lymphatic glands are normal in size. There is a wide band of discoloration of the skin in the middle line extending from the ensiform cartilage to the pubes. No other swellings can be discovered; 53 small moles are scattered about the body. Nerve sheaths are not palpable. I removed the growth, and it has been described as follows: "The large mass of tissue is composed of very cellular fibrous tissue, with little tendency to a whorled arrangement in most places. There are, however, areas in which the cells form small concentrically laminated masses. No epithelium is seen covering this mass. The structure appears to be that of neurofibromatosis."

Both cases are doubtless lesions of the endoneural connective tissue, and the association of multiple moles, pigmentation of the skin, and neurofibromatosis as described by Soldau are evident.

A CASE OF INTRACRANIAL NEOPLASM
WITH UNUSUALLY RAPID DEVELOPMENT OF SYMPTOMS.

BY JOHN INKSTER, M.D. ABERD., M.R.C.P. LOND., D.P.H. OXF.,
HON. CONSULTING PHYSICIAN, STOCKTON AND THORNABY HOSPITAL; HON. PHYSICIAN, NORTH ORMESBY HOSPITAL, MIDDLESBROUGH.

THE following case is of interest in that rapidity of development of symptoms led to an error of diagnosis.

The patient, a man aged 38, had nasal polypi removed on July 7th, and during the operation pus was found in both antra. The antra were drained, and he was discharged from hospital apparently well. He should have reported to hospital on the 16th, but was unable to do so, as he was suffering from septic tonsillitis. A week later, having recovered, he presented himself for examination, and the condition of the nose and throat was satisfactory. He remained well until August 13th, when he noticed that he had difficulty in playing the piano with the right hand. The difficulty increased, and power was completely lost in the right upper extremity. Two days later he noticed that he was dragging the right foot, and power was lost in the right lower extremity. On the following day he had involuntary movements of the upper and lower extremities, although he had no power of voluntary movement. These movements were so severe that they interfered with sleep, and his friends were unable to hold the arm and leg still. He had had no headache, but had vomited once.

When seen on August 20th he had complete paralysis of the right upper extremity, almost complete paralysis of the right lower extremity, and slight weakness of the right side of the face. The pupils were equal, and reacted normally to light and accommodation. There was no nystagmus, and the eye movements were normal. Examination of the fundi showed neither optic neuritis nor any other abnormality. He was unable to close the right eye completely. On the right side the triceps, supinator, and knee- and ankle-jerks were all exaggerated, and there was ankle-clonus. The plantar reflex was extensor on the right side and flexor on the left. Sensation was slightly blunted in the right arm and leg. Speech and mental condition were unaffected. There was no incontinence and no retention of urine.

The heart, lungs, and abdomen, except for an old appendicectomy scar, showed no abnormality. The urine was normal. Pulse-rate was 72, and temperature was 98·4° F. A diagnosis of intracranial abscess was made, and he was admitted to North Ormesby Hospital. A blood count showed 10,000 white cells per c.mm., and a normal differential count. It was thought that the position of the abscess was just subcortical under the middle of the motor area, and a skiagram showed an indefinite shadow in this region. There was no development of symptoms nor of physical signs except that he vomited twice.

On August 31st Mr. J. B. T. Keswick trephined over the middle of the motor area on the left side, and explored the underlying brain, but no pus was found. The opening in the skull was enlarged and the surrounding brain explored, but without success. There was practically no change until Sept. 4th, when respiration began to fail. Patient became cyanosed, and there were râles over the whole of both lungs. The temperature rose to 100·6° F. and the pulse-rate to 148, and he died on Sept. 6th.

Post-mortem examination showed no meningitis, and the brain appeared normal on external examination, except that there was hæmorrhagic discoloration of its surface under the opening in the skull. Section revealed a large, soft, chocolate-coloured tumour in the left cerebral hemisphere. It was irregularly fusiform in shape, with its long axis parallel to that of the cerebral hemisphere, and its widest part in the region of the Rolandic area. It extended for about an inch and a half forward, and for about 2 inches backward from this area. It lay mostly in the white matter, but extended into the grey matter of the cortex in the middle of the motor area. It was not encapsulated. Unfortunately, as a report was required for a coroner's inquest, the brain had to be cut without being hardened, and so accurate observation of the relationships of the tumour could not be made. Histological examination showed the tumour to be a gliosarcoma. There was fine fibrous adhesion of the visceral to the parietal pleura over the greater part of the right lung, and there was congestion of the bases of both lungs. The cæcum was adherent to the anterior abdominal wall by fine fibrous adhesions where the appendix had been removed 20 years previously. There was no pus in the ethmoidal cells. All other organs were healthy.

Commentary.

In this case the onset was not sudden enough for the lesion to be embolism or hæmorrhage, and there

was no evidence of circulatory failure to suggest thrombosis. At the same time the development of the paralysis seemed too rapid to be caused by a neoplasm. The history of a recent operation for a septic nasal condition followed by septic tonsillitis was strongly suggestive of a metastatic abscess. The occurrence of what from the description appeared to be Jacksonian convulsions suggested that the lesion was in contact with the cortex, but the extent of the paralysis prepared one for a deep lesion in the internal capsule. The rapidity of onset and the history of recent nasal sepsis were misleading, but the Jacksonian convulsions led to the localisation of, at any rate, a part of the lesion.

It is of interest that optic neuritis and headache were absent and that vomiting was infrequent, in spite of the large size of the tumour. Perhaps this is explained by there being little, if any, increase in the intracranial pressure. The brain when removed did not appear larger than normal, nor did the left side seem larger than the right.

I am indebted to Dr. W. H. Mackinlay for the privilege of seeing this case, and to my colleague, Mr. Keswick, for undertaking the operation.

Medical Societies.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Liverpool on Oct. 28th, Prof. FLETCHER SHAW (Manchester), the President, in the chair, when Mr. ST. GEORGE WILSON (Liverpool) read a paper on

Twilight Sleep.

He said that he had investigated twilight sleep (scopolamine narcosis) on the lines recommended by the committee appointed by the Section of Obstetrics and Gynæcology of the Royal Society of Medicine in 1917. He had treated a series of 32 cases (16 primiparæ and 16 multiparæ). He considered his results under the following headings :—

Precautions taken to Exclude Sensory Impulses.—A quiet room was selected which could be darkened. Cotton-wool soaked in oil was placed in the patient's ears. She was kept in bed and discouraged from talking, and conversation was carried on in whispers. Observations were made, and the delivery carried out, by the light of a small shaded lamp.

Time of Injections, Drugs Employed, and Doses.—In primiparæ injections were begun when the cervix was dilated to the size of two fingers and in multiparæ when labour had definitely commenced. The first injection consisted of omnopon, gr. 2/3 (Roche) and scopolamine hydrobromide, gr. 1/50 (Burroughs Wellcome). Each subsequent injection consisted of scopolamine, gr. 1/450. In no case was the omnopon repeated. The second and third injections were given at hourly intervals. Subsequent injections were given at longer intervals, from 1½ to 2 hours, according to the condition of the patient. If labour ceased entirely, as it did in four cases, the injections were withheld until it recommenced. The average number of injections in primiparæ was 4·5 and in multiparæ 4·5. The injection of pituitary extract was employed in 17 cases (9 primiparæ and 8 multiparæ), chiefly in the second stage to augment the expulsive contractions of the uterus. The amount of pituitary extract for a single injection never exceeded 0·25 c.cm.

Duration of Labour.—The average duration of labour was as follows :—

—	Primiparæ.	Multiparæ.
Total length of labour ..	14 hrs. 45 mins.	16 hrs. 26 mins.
Duration of labour after treatment began	5 hrs. 41 mins.	6 hrs. 5 mins.

The longer period in multiparæ was explained by the exceptional length of some of the labours.

Effect on Uterine Contractions.—In all but two cases the uterine action was altered by the injections. Lengthening of the intervals between the contractions was the chief alteration. The strength and duration of individual contractions were also diminished. These changes were most marked between the second and third injections—i.e., in the second hour—and could be ascribed to the action of the omnopon, for in most of the cases the pains increased again in force and frequency to culminate in expulsion of the fœtus. In four cases labour ceased altogether during the treatment for periods of 18, 6, 4, and 2 hours respectively.

Voluntary expulsive efforts did not arise automatically, but as a rule the patient made voluntary expulsive efforts when instructed to do so.

The maternal pulse and respirations were unaltered. Observations on the *blood pressure* during labour did not show any relation between the height of the blood pressure in mm. of mercury and the character and frequency of the uterine contractions. As a rule it was noted that the blood pressure tended to fall during labour.

Subjective Symptoms.—Thirst was noticed in every case. Nausea occurred in a few cases. Some of the patients complained bitterly of the pain, especially in the second stage.

Objective Symptoms.—Sleep between the pains was present in every case; slight restlessness and a moderate amount of mental confusion were noted as being associated with the uterine contractions in the most successful cases. Marked restlessness, difficult to control and tending to occur in periods of uterine relaxation, was an indication for postponing the next dose of scopolamine. Uncontrollable excitement was never seen.

Condition of Reflexes.—The pupils were normal and reacted to light. The corneal reflex was also normal.

Memory of Objects Shown.—A key or a pair of scissors was usually the object shown to the patient for the memory test. The memory of the object was lost in only two cases, but recognition of the object shown was never at fault.

General anæsthesia was only induced in five cases at the end of the second stage—three times for forceps extraction and twice because it was feared amnesia had been lost owing to the interval over which injections had been stopped when labour had ceased.

Mode of Delivery.—Delivery of the child was spontaneous in all but four cases, when forceps were used. Forceps were employed in two multiparæ with contracted pelvic outlet, and in two primiparæ, one with twins and the other with poor pains and a rigid perineum. In the latter cases analgesia was so good that an anæsthetic was unnecessary.

Delivery of Placenta.—In one case the placenta was delivered by Credé's manœuvre. In nine cases it was noted that hæmorrhage associated with the third stage was more than usual, but never excessive.

Condition of the Child.—One child was stillborn. The mother, a primipara, had premature rupture of the membranes and weak pains. The other children were born alive and were discharged healthy. In the majority of cases the child showed varying degrees of apnœa, but cried sooner or later on being left alone in a warm place. All the babies were thirsty for the first 24 hours.

Sleep after delivery was encouraged, and it was found that the better the sleep the more successful was the case.

Amnesia and Analgesia.—The establishment of amnesia alone was attempted as the condition of analgesia signified too great an intoxication. "Islands of memory" were produced by stimuli being apperceived during a lessening of the amnesia. The memory test was valueless, however applied. The best guide was the condition of the patient between the pains and her reaction to uterine contractions. The optimal condition was that of somnolence between the pains, with a moderate degree of restlessness and muttering delirium associated with the uterine

contractions. There were three main groups of cases: 1. Seventeen in which the patient remembered nothing of the labour. 2. Twelve in which the patient had islands of memory formed and remembered incidents during the labour. 3. Three in which amnesia failed.

Puerperium.—The condition of the patient was markedly better than in normal cases. There was less exhaustion. Three cases of pyrexia occurred—one of pyuria, one of suppuration of the perineum, and one of retention of membrane and delayed involution of the uterus. Lactation was normal in all the cases. Mr. Wilson's *conclusions* were:

(1) The treatment is very good for the mother, lessening the mental and physical strain of labour; but it exacts unremitting attention from both doctor and nurse. (2) The uterine action is definitely diminished, and so labour tends to be longer. This may be counteracted, however, by the use of pressor substances or by artificial methods of delivery. (3) There is no danger either to mother or child if the effects of the injections are carefully observed. (4) The memory test is useless. (5) Strict precautions must be taken to exclude all adventitious stimuli.

The PRESIDENT said that twilight sleep had been much boomed when it was introduced 20 years ago. It had then fallen into disrepute, and now was the time to take a clear and dispassionate view. He did not make use of it to any great extent. The great disadvantage was the amount of time taken up.

Dr. F. H. LACEY (Manchester) asked if Mr. Wilson had noticed an abnormal number of persistent occipito-posterior presentations. He thought that the apnœa was due to delivery rather soon after the injection of morphia. He used ether at the end of the second stage to diminish the pains; it also tended to stimulate the infant. He agreed that pituitrin was needed to stimulate uterine contractions. He gave scopolamine, gr. 1/100, for the first dose, and gr. 1/200 subsequently. A good nurse was essential and attention to the bladder was necessary.

Prof. MILES PHILLIPS (Sheffield) asked if the patients complained of dryness of the mouth. The preparation of scopolamine used was, he said, of importance.

Mr. WILSON, in reply, said that he had not had any persistent occipito-posterior positions in this series. He did not consider it was true twilight sleep if an anæsthetic was used. He had not had any patients who remembered their thirst during the labour.

Inversion of the Uterus.

Mr. WILSON showed a specimen as follows:—

A 3-gravida, aged 30, was delivered of a healthy male child with the breech presenting. Twenty minutes afterwards compression of the uterus was employed for bleeding, when the whole uterus and part of the vagina became inverted. The placenta was almost separated. It was removed and the fundus uteri was douched with hot lotion till it retracted. A tentative attempt at a reposition failed, and the patient was treated with morphine, gr. ¼, salines, and warmth for moderate shock. She died three hours later.

The specimen consisted of the pelvis with the uterus and the vagina inverted, showing the broad and infundibulo-pelvic ligaments greatly stretched and the ovaries and tubes out of sight in the cavity of the inverted uterus. There was no intraperitoneal bleeding and the bottom of the pouch of Douglas was markedly raised.

Dr. LACEY described a second case of inversion:—

A primipara, aged 23, was admitted to hospital suffering from an acute inversion which had occurred ten hours previously after an apparently normal labour. The midwife had expressed the placenta and had then noticed the inverted uterus. The patient was profoundly shocked. After treatment of the shock some hours later an attempt at reduction was made, but failed owing to œdema. Aveling's repositor was tried and failed. The patient had pyrexia for three months and had a white-leg. She suffered from menorrhagia and was in very bad health. Nine months later she was better; an attempt was made at replacing the uterus by incising the cervix and anterior wall of the uterus. This failed, until sutures were put in the fundus of the uterus and were pulled up through an abdominal incision. Then the uterus was easily replaced and the patient made a good recovery.

Prof. PHILLIPS said that of 184 cases collected from THE LANCET and the *British Medical Journal* up to 1912, 43 (23·4 per cent.) had been fatal. Seventeen of the patients had died without treatment of any kind, usually before the doctor's arrival. In 49 cases the condition had been left unreduced (often undiagnosed). Of these two (4 per cent.) died of sepsis. In two cases the body of uterus had been twisted off and torn away by midwife. Both patients recovered.

With immediate replacement the figures were as follows:—

	Cases.	Deaths.	Per cent.
Marked shock	79	24	30
No shock	23	0	0
Shock not mentioned (probably absent)	11	0	0

In one case replacement had been deliberately postponed until the shock had passed off. The patient recovered.

Of 34 cases recorded in the same journals between 1912 and 1926 four had proved fatal, one of them before the doctor's arrival. In seven the condition had been left unreduced (some undiagnosed). All of these recovered. The following was the mortality when immediate replacement was performed:—

	Cases.	Deaths.	Per cent.
Marked shock	8	3	37·5
No shock	9	0	0
Shock not mentioned	3	0	0

In seven cases replacement had been deliberately postponed until recovery from shock. Among these there had been no deaths. He was of opinion that treatment of shock was essential before any attempt at reposition.

Miss FRANCES IVENS (Liverpool) said that she had seen a patient who had suffered from inversion twice.

The PRESIDENT said that he had seen three cases, in one of which inversion had been followed by puerperal sepsis and later by death due to intestinal obstruction caused by adhesion of a loop of intestine to the fundus of the uterus.

In reply Mr. WILSON and Dr. LACEY said that they thought the cause of shock was stretching of peritoneum, possibly with compression of the ovaries in the inverted uterus. The treatment in the first place was that of shock.

Mr. W. W. KING (Sheffield) described a case of

Concealed Accidental Hæmorrhage Treated Expectantly.

The patient, aged 46, was eight months pregnant with her twelfth child. Fourteen hours before admission to hospital she suffered from faintness, repeated vomiting, and acute abdominal pains. On admission she was extremely ill, the face was pallid, the mouth and tongue dry, and the respirations short, jerky, and rapid. The pulse-rate, uncountable at the wrist, was 180 at the apex. There was a cloud of albumin in the urine. The uterus was tense, hard, and tender. She was a hopeless surgical risk. She was given 500 c.cm. of defibrinated blood and 2·0 c.cm. of thromboplastin, and the blood pressure soon afterwards was 100 mm. of mercury. Two hours later the blood pressure was 80, and she was given another blood transfusion, after which the blood pressure rose to and remained at 100. Labour then started, and she was delivered in four hours of twins with two pounds of blood-clot. There was no post-partum hæmorrhage and recovery was uninterrupted.

In a recent paper before the Society, said Mr. King, he had called attention to the fact that in concealed accidental hæmorrhage the uterine muscle showed no histological evidence of disease or degeneration, and that it was functionally active and capable of strong contractions. This case supported the fact of the activity of the uterine muscle and showed that the expectant method of treatment was possible in cases of concealed accidental hæmorrhage.

Prof. E. E. GLYNN (Liverpool) asked if the blood-platelets had been counted in this case. He had found that they increased in number after confinement up to the eighth to tenth day.

Dr. J. H. WILLETT said that he believed that treatment should be expectant, though he had done Cæsarean section in one or two cases.

Mr. KING, in reply, said that the blood-platelets had not been counted. Mr. King also showed a specimen of carcinoma of the cervix in a case in which radium had four years previously been inserted for the treatment of bleeding from a fibroid.

Dr. LEITH MURRAY (Liverpool) described a case of

Columnar and Squamous Carcinoma coexisting in a Uterus.

The patient was a nullipara, aged 53, in whom the menopause had occurred 18 months previously. For four months she had had a foul blood-stained discharge. The uterus was enlarged and there was a nodule on the cervix believed to be a small retention cyst. A total hysterectomy was done four and a half years ago. She had had four treatments with radium with no recurrence. The specimen showed two different types of growth: (1) a fungating growth in the corpus; and (2) a dense infiltration extending from the external os upwards for two and a half inches. Above was a columnar carcinoma typical of that in the body, while lower down was the usual squamous-celled carcinoma with massive processes of squamous cells surrounded by considerable round-celled deposit.

The nodule on the vaginal cervix, said Dr. Murray, was obviously an area of squamous carcinoma not yet broken down. He also described a case of carcinoma of the cervix occurring five years after removal of the appendages, and showed sections of the endometrium and ovary after intra-uterine radiation.

Dr. C. P. BRENTNALL (Manchester) showed a specimen of Oxyuris Vermicularis in the Uterus, and Mr. LEYLAND ROBINSON (Liverpool) showed specimens relating to suspected criminal abortion.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

A MEETING of this Section was held on Nov. 4th, when Dr. GIBBON FITZGIBBON, the President, opened a discussion on

SOME POINTS IN OBSTETRICS WHICH CALL FOR RECONSIDERATION.

He began by referring to the increased frequency with which Cæsarean section was performed for contracted pelvis, without corresponding reduction in the number of craniotomies and difficult forceps deliveries, and without any considerable improvement in the mortality of the mothers and infants. He advocated strongly the development of antenatal clinics and reviewed the various conditions of expectant mothers which could be benefited by antenatal supervision.

Dr. L. CASSIDY considered that Cæsarean section in the treatment of contracted pelvis must be regarded as a failure of obstetrics. The number of women who required the operation at term was comparatively small. He thought that if medical men understood the importance of very carefully investigating every woman at the 36th week of pregnancy the mortality from Cæsarean section would be reduced almost to vanishing-point. Properly carried out the operation should involve very little risk to the patient. 30 per cent. of all women had the head unfixed at the onset of labour, and yet a fairly large percentage of them had a perfectly normal labour. Every woman in whom the fœtal head could not be forced into the pelvis at the 36th week should be examined under anæsthesia.

Dr. BETHEL SOLOMONS said that he had greatly increased the scope of antenatal work at the Rotunda. He thought that doctors in private practice should charge a composite fee for attendance, in order to encourage patients to come regularly, and for panel patients antenatal supervision should be paid for and should be compulsory. The incidence of Cæsarean section had increased and the operation had been abused. No self-respecting obstetrician would do section if it could be avoided. In spite of every effort the number of cases at the Rotunda had increased, but the operation was nearly always done after a trial of labour, and the lower segment was the site of choice. When done at the proper time in selected cases it was an excellent operation, but the time must be carefully chosen, and the operator must make up his mind from a careful study of the case that the child would not be delivered by the natural passages, and the child should not be left so long that it was dead or potentially dead before section was started. The low segment operation could not be regarded as a failure in obstetrics, and when it was employed after careful antenatal supervision and a thorough trial of labour, combined with pelvimetry, and the mother and child were saved, the result might be regarded as good obstetrics. Every patient should have the advantage of internal pelvimetry besides other methods of diagnosis.

Sir WILLIAM SMYLY felt certain that the number of cases of Cæsarean section would go on increasing. The operation was not done often enough in cases of placenta prævia; in Germany it was now frequently done in cases of eclampsia. Timidity often led men to perform operations because they were afraid to wait and see. He had had patients who had been in hard labour for a week and had delivered themselves at the end of that time, perhaps of a dead child. Women would not consent to Cæsarean section more than a few times; in fact most women would not face it a second time. The question, How long should labour be tried, resolved itself into a matter of experience. The head would remain above the brim till the cervix was retracted. Not many obstetricians would nowadays wait longer than three or four days if the cervix was not drawn up by then. This he did not call a trial of labour. It was experience, more than any definite thing which happened, which indicated how long labour should last. The head was the best pelvimeter, but not the only one.

Dr. J. S. QUIN had known cases in which Cæsarean section had not been done because doctors were inclined to think that it was not an obstetrical operation, but a surgical one. Cæsarean section was a way of getting out of a difficult situation, and though he agreed that all obstetricians wanted to avoid doing it unnecessarily, he thought that it had not been used enough in the odd peculiar cases which cropped up every now and again. The results obtained from Cæsarean section were poor and not on a par with the results of any other major operation in surgery for a non-malignant condition. The maternal mortality was large and there was at least 50 per cent. sterility after the operation.

Dr. A. H. DAVIDSON said that antenatal work was the most important advance which had been made in obstetrics within recent years. He would like to see the need for it demonstrated to all the practitioners and all the women in Ireland. Its greatest use was that it brought a large number of women with abnormal pregnancies into hospital. Detroit had many antenatal clinics, run by the city itself, but with easy access to the hospitals. The maternal mortality of cases delivered in the city, and not in the clinic, was 6·75 per 1000, whilst the mortality in the clinic was only 3·5. The deaths from puerperal sepsis had been reduced by over one-half at the clinics, but the mortality from eclampsia had only been reduced by 25 per cent. Of the women who attended the clinics 30 per cent. were found to have some intercurrent disease or abnormality, which could usually be set right. Only 6 per cent. of the women of Detroit, however, came to the clinics. Dr. Davidson believed that antenatal care should be carried on into postnatal care, and that every woman on leaving hospital should be advised to come back in six weeks' time to have a bimanual examination made to find out where the uterus was, and should be told to bring the baby back with her.

Dr. A. P. BARRY had found that, practically speaking, the urine of every pregnant woman contained albumin. He thought that the only way to arrive at a conclusion about albuminuria was to get a catheter specimen.

Dr. D. J. CANNON asked if, after trial of labour, the President did a lower segment section or a classical segment section.

Dr. R. H. CORBET thought that the chief obstacle to antenatal care was the inertia of the public. Antenatal work needed an earlier start; it was impossible to get good results unless the patients came for advice early, and followed the advice given to them. The increase of Cæsarean section was partly due, he considered, to the increased transport facilities, and was to that extent fictitious. The same argument applied to eclampsia.

The PRESIDENT, in reply, said that he did not want to be taken as condemning operative midwifery in the hospitals; but he thought that the cases should diminish, and they were not diminishing. Any patients who showed abnormality at antenatal clinics should be put under special care. Seven or eight hours' trial of labour was sometimes long enough, but sometimes was not. After trial of labour he at present favoured lower segment section, though at one time he had done classical segment section. Obstetrical cases should be watched throughout. In England not one of the maternity hospitals went in for internal pelvimetry.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.

ON NOV. 1st Prof. D. P. D. WILKIE read a paper on *Gall-bladder Disease and Gall-stones.*

After tracing the history of the development of gall-bladder surgery, Prof. Wilkie described the types of gall-stones which were at present believed to be of metabolic origin—namely, the single radiate cholesterol stone, found as a rule in stout females, and associated with afebrile attacks of colic but with little disturbance of health, and the multiple pigmented calculi found most typically in acholuric jaundice. He considered that cholecystitis was almost invariably an intramural streptococcal infection. It was quite exceptional to be able to grow organisms from the bile in any but acute cases. The failure of most observers, in this and other countries, to confirm Rosenow's observations was due, he believed, to faulty technique. Dr. A. L. Wilkie, working in the Surgical Research Department in Edinburgh, had shown that in 85 per cent. of cases of chronic cholecystitis a streptococcus could be grown from the cystic gland, and this organism on experimental inoculation had shown a selective affinity for the gall-bladder. Prof. Wilkie went on to describe the mode of origin of the multiple cholesterol-bilirubin-calcium stones after an attack of acute cholecystitis, and the origin of the multiple mulberry cholesterol calculi following cholesterosis with lipoid papillomata. In discussing the symptomatology of gall-stone disease, he drew special attention (1) to obstruction of the neck of the gall-bladder as the most frequent cause of gall-stone colic; (2) to the fact that the common bile-duct had no muscular coat, which permitted a stone to reside there without giving rise to symptoms; and (3) to the definite muscular contraction of the gall-bladder which might be produced by ingestion of fat. In diagnosis he ascribed a very limited field of usefulness to the duodenal tube; although it gave valuable information in late cases where the ducts were infected, it failed to give positive evidence in the earlier stages when the infection was intramural. Of all accessory methods in the clinical diagnosis of gall-bladder disease he gave first place to cholecystography, demonstrating the accuracy with which radiolucent cholesterol calculi could be made out, and the advantages of combining cholecystography with a barium meal examination. In regard to treatment, he contended that drugs which merely had a disinfectant action in the lumina of the biliary passages could not be expected to achieve much. He advocated removal of the gall-bladder, in whose wall the infection was located in every case in which it could be done without undue risk.

Reviews and Notices of Books.

REFLEXES.

Conditioned Reflexes: An Investigation of the Physiological Activity of the Cerebral Cortex. By I. P. PAVLOV, For.Mem.R.S., Director of Physiological Laboratories in the Russian Academy of Sciences, Petrograd. Translated and edited by G. V. ANREP, M.D., D.Sc., Lecturer in Physiology in the University of Cambridge. London: Humphrey Milford, Oxford University Press. 1927. Pp. 430. 28*s.*

THE work accomplished by Prof. Pavlov and his numerous collaborators in the course of the last 25 years has been known to many physiologists, and its application to functional problems connected with the nervous system of man has been attempted on more than one occasion—somewhat tentatively, it is true, and on a comparatively small scale. We are probably safe in stating, however, that except in a few circles it has not been appreciated at its full value, largely because of the absence of any more or less complete and authoritative exposition of its bearings in a language with which most workers are familiar. In 1924 Prof. Pavlov conducted a course of lectures dealing with the results he had obtained and with his technique and working theories, and from these lectures the present volume has been elaborated. Here are spread out before the reader not merely protocols of numberless experiments and descriptions of complicated technical procedures; he is now enabled for the first time to follow the train of thought in the author's mind, step by step, from initial investigations whose import was scarcely realised even by their originator, to a stage where their significant range is shown by abundant and conclusive evidence to have expanded beyond the narrow bounds of laboratory vision and to touch with unmistakable definiteness not a few of the deepest problems of cerebral function.

A historical introduction deals with the limitations of ordinary clinical and pathological methods of solving questions of cerebral localisation and functions, and with the futility, in Prof. Pavlov's opinion, of subjective modes of inquiry. In place of the latter, by long and laborious trials, he eventually brought to a high pitch of perfection the method of approach by what in his terminology is the "conditioned reflex." Briefly, while inborn reflexes are few in number, an experimental animal (the dog) can be shown to have *in potentia* a capacity for developing very many other reactions, equally definite, objective, and automatic—equally reflex, in short—which can be initiated and perpetuated by excitations over which the experimenter has full control. When food is shown to the animal and salivary secretion begins in a few seconds we are dealing with an inborn reflex; when food is put in his mouth, or acid, saliva is secreted, either for alimentary reasons—an inborn alimentary reflex, or to wash out a rejectable substance—an inborn defence reflex. By combining the giving or showing of food with a stimulus of another order—e.g., the ticking of a metronome—a physiological association can be started and developed in the animal, the result of which can easily be determined. Within a comparatively short time and with comparatively few repetitions it is possible to get the animal to react by salivation when only the sound of the metronome reaches him, all other excitations being absent. This is the conditioned reflex. On so simple an experimental basis Prof. Pavlov has built up a body of physiological doctrine whose wide-reaching applications it is the purpose of this fascinating volume to discuss, but they can be understood only if the extremely complex development of the research is systematically followed. By elaborate experimentation it has been possible to examine physiologically the functions of external and internal inhibition, to demonstrate irradiation and concentration as physiological properties of the cortex, to

study the analytic and the synthetic function of the same—in a word, to show how the cortex actually works, and all this, be it repeated, by means which exclude the subjective factor absolutely.

Reference must be made to Prof. Pavlov's conclusions that sleep is nothing else physiologically than internal inhibition, which has diffused itself over the whole cortex and descended also to some infracortical centres (posture and equilibrium centres of Magnus and De Kleijn); and that if the inhibition is confined to the cortex a state of catalepsy ensues. The behaviour of the animal is determined by the united function of the cortex; by its cortical "analysers" (sensory centres) it adjusts itself to its surroundings; without its cortex it is converted into a comparatively simple reflex machine, with a relatively limited number of conditioned reflexes; coördination of its activities is based on the innumerable conditioned reflexes for which intermediation of the cortex is indispensable. One of the fundamental peculiarities of cortical life is its perpetual state of flux, its extraordinary reactivity; for the cortex the same intimately interwoven functions of excitation and inhibition are for ever at work, as are seen in the spinal cord when it is experimentally isolated. In a final chapter the author attempts a comparison with what is known of human activity, and states the obvious conclusion, that "different kinds of habits based on training, education and discipline of any sort are nothing but a long chain of conditioned reflexes."

The full import of this epoch-making addition to neurophysiological doctrine, and through it to neurology, can scarcely yet be grasped. It is possibly the outstanding contribution of the present century.

Les réflexes de posture élémentaires: étude physio-clinique. By P. DELMAS-MARSALET, Préparateur de Physiologie, Faculty of Medicine, Bordeaux University. With an introduction by Prof. V. PACHON and H. VERGER. Paris: Masson et Cie. 1927. Pp. 115. Fr.16.

BY elementary reflexes of posture Dr. Delmas-Marsalet understands what is commonly called a reflex shortening contraction. Known for many years as the "paradoxical contraction" of Westphal, produced in the tibialis anticus, for example, by sudden and firm approximation of its origin and insertion points, the phenomenon has been studied by many workers and in different forms of nervous disease, as well as in states of health. Although a full examination of its behaviour in extrapyramidal conditions was published by Foerster in 1921, and although it was critically considered by Wilson in his Croonian lectures of 1925, dealing with the same problems, the author makes no reference to these contributions, but ascribes our "notion of the reflex of posture" to Foix and Thevenard (1923). Whether the familiar shortening contraction should be called a reflex of posture is open to question; be this as it may, the merit of Dr. Delmas-Marsalet is to have subjected it to a careful and minute investigation in a variety of nervous conditions. His view that it is highly characteristic of extrapyramidal disease will not receive the assent of all neurologists, since its frequency in these states has not always been confirmed; whether the exaggeration of "reflexes of posture" *explains* the characters of Parkinsonian rigidity, as is here contended, is equally open to discussion. Interesting experiments with different pharmacological agents lead to the conclusion that elementary reflexes of posture appear to correspond, in *la vie de relation*, to vagotonia in the *vie végétative*. They are stated not to be influenced either by decerebration or by experimental lesions of the basal ganglia, whence it is concluded that Parkinsonian syndromes are not attributable to defect of function of these (cortical, basal) centres—surely a dubious line of argument. Indeed, the author considers that current views of Parkinsonian pathogenesis are vitiated by the "fundamental error" of supposing that localised lesions of basal grey matter are more important from the viewpoint of function than cortical lesions "minimes, mais trés étendues." Here without question a finger is laid on the weak point of the clinico-anatomical method, but whether his own alternative theory is therefore or thereby justified is another matter.

L'état actuel de l'étude des réflexes. By M. MINKOWSKI, Professor in the University of Munich. Translated from the German by Dr. HENRI EY, Interne des Asiles de la Seine. Paris: Masson et Cie. 1927. Pp. 75. Fr.12.

A RECENT monograph by Prof. M. Minkowski has been translated into smooth and accurate French by Dr. H. Ey, and will doubtless receive due appreciation in this form. It deals with the whole question, so much in the melting-pot, of reflexes. With the view that definition cannot be established with certainty or satisfaction we are entirely in agreement; the simplicity of the Sherringtonian conception lands us in difficulties when it is applied to particular phenomena. To attempt its delimitation by stating that reflexes are "reactions which are neither too complex nor too simple" is merely to avoid the problem. There is a world of difference between the non-neural or aneural response of a lowly organism and a complex conditioned reflex in man, yet it is equally true to say that no break of a fundamental kind is traceable in the scale reaching from one extreme to the other. Another contention of the author which cannot be too persistently maintained is that the conditions of natural life in the animal differ materially from those of experimental and even of clinical exploration. Isolation of mechanisms by experiment distorts our idea of integrated function to a very great extent, and the application of knowledge thus derived to the behaviour of the organism as a whole must be undertaken with no little circumspection. In other words, what we often suppose to be concrete and specific functions, experimentally determined, are in reality but fragments of functions artificially elicited and isolated from their natural connexions.

Prof. Minkowski's contribution deals largely with the organisation and the dissolution of reflexes and with their relation to instincts, and is conceived throughout in a scholarly and philosophic vein which gives the whole problem its appropriate setting. In regard to the question of instincts he enrols himself with those who hold them to be distinguishable solely by their greater complexity and range, conditioning the activity not of one organ but of the individual as a whole. The fact that both serve to bring about reactions objectively useful in a biological sense (for the organism concerned, or for the species) proves their fundamental identity.

ATLAS OF BONE RADIOGRAPHY.

Atlas de radiographie osseuse. By G. HORET and A. DARIAUX, Radiologists to Les Hôpitaux de Paris, and Prof. JEAN QUENCE. Paris: Masson et Cie. 1927. Pp. 129. Fr.160.

THERE has recently been somewhat of an epidemic of radiological atlases published in this country. This volume, however, claims to be the first of its type in France. It deals with normal bones and joints only, and forms the first of a series of X ray atlases in course of publication. Further volumes will deal with pathological bone conditions, the stomach and duodenum, the intestine, the urinary tract, and the development of the osseous system. Each of the 123 illustrations is accompanied by an outlined duplicate which is annotated in the margin, and the following data are supplied: (1) the position of the part radiographed; (2) the angle of the normal ray to a definite anatomical point or plane; (3) the distance from the anticathode; (4) the degree of reduction, if any; (5) full anatomical explanation of all the shadows seen. The radiograms are well chosen and

well reproduced, and the method of outlining adopted makes the explanatory text clear. The radiological anatomy of the skull is especially well portrayed and the interpretation of the overlapping shadows easy to follow. The authors point out the value of a knowledge of radiological anatomy to students in the dissecting rooms, and put in a plea that it shall be taught along with the "dry" osteology—a course which is now adopted in at least three British medical schools.

This atlas forms a useful reference for those who wish for a copy of the normal to compare with any pathological condition, and is a great help in acquiring a knowledge of the normal. It is one of the best of its type, and we shall look forward to the subsequent volumes of the series.

HYGIENE IN INDUSTRY.

A Short Manual of Industrial Hygiene. By L. P. LOCKHART. With foreword by Lord INVERNAIRN. London: John Murray. 1927. With diagrams. Pp. 114. 3*s.* 6*d.*

Dr. Lockhart has written in simple language a little book which cannot fail to interest works managers and foremen in the principles underlying health. The spirit in which the facts are set out should go far to recommend them to all who realise that the health of workers is an economic asset without which in these days profits are hard to come by. The author states the principles of factory hygiene in relation to ventilation, humidity, and illumination, dealing sympathetically with the need for cloak-rooms, washing facilities, and canteens. But he makes it clear that without personal hygiene the provision of hygienic accommodation will fail of its effect, and the way is pointed for maintaining daily health and avoiding such diseases as the common cold and influenza. Vague ill-health, he points out, is at the root of most sickness; what is the matter with the sick is their tendency to be sick. Industrial accidents are but seldom "acts of God," they are commonly the result of the human factor in industry. Illness or fatigue breeds errors of judgment and carelessness which are fundamental causes of accidents. Useful hints are given for first-aid in emergencies. A chapter is properly devoted to the characteristics of the young workers from whom industry derives its strength or weakness; every effort to settle them well into their work and to keep them well when so engaged will be money and time well spent. The net value of establishing medical supervision for those industrially employed can only be properly assessed by those who are fully occupied in this work of whom the author is one.

The book can be unhesitatingly recommended.

THE QUEST OF THE BOY.

A Study of the Psychology of Character Training. By F. W. W. GRIFFIN, M.A., M.D., Assistant County Commissioner (London) Boy Scouts; late Lieutenant, Southwark Regiment Church Lads' Brigade. London: The Faith Press. 1927. Pp. 148. 1*s.* 6*d.*

PARENTS of old trained character with a light conscience and a heavy hand. Now we seek to cultivate it more tenderly. Dr. Griffin goes to work with reverence in his study of boyhood along the lines of the Hindu Trinity. His first three chapters deal with Wisdom, or "the right use of knowledge," and he discusses the training of the senses by a multitude of games and tests and their control for use by memory, association, logic, and concentration. Six chapters deal with Power—the instincts, the emotions, and the stages of growth and adaptation. The last three chapters treat of Will, or conscience made manifest in conduct, and especially in citizenship and social service. Many of the aphorisms will be useful to teachers in all circumstances, though they are written by the author in connexion with the boy scout movement. Here are three particularly valuable warnings for pedagogues:—

"The leader who tries to transfer his ideals to a boy is wasting the time of two people."

"Boys are frequently told that 'they are in honour bound to,' &c., but who bound them? Very often someone other than the boy. This is servitude, not honour, which is essential to the character of a free man. A boy may have bound himself one day, and his fluid nature unbinds him the next; what, then, is left to spur him to keep faith? His respect for himself as a fount of honour. Therefore, a boy must have self-respect before he can be honourable."

"The man who has lost his boyish horizon altogether is like a long-sighted person who cannot see objects near at hand."

Dr. Griffin discusses scouts of all ages and the way to make them benefit by training. He especially cares for the adolescent or "rover," and to him the last and perhaps the best chapters of a sound book are devoted. He quotes neither Jung nor Freud, nor names them in the bibliography; but he is a well-read and skilled psychologist, who loves wisely the subjects of his care.

MANAGEMENT AND ADMINISTRATION OF ESTATES IN LUNACY.

Second edition. By G. E. MILLS, O.B.E., and A. H. RONALD W. POYSER, B.A. London: Butterworths. 1927. Pp. 60. 7*s.* 6*d.*

MEDICAL practitioners are professionally more interested in other aspects of lunacy law than in the management of the property of persons who are of unsound mind or who are incapable—through mental infirmity arising from disease or age—of managing their affairs. But for those who require information on this subject this is a concise and adequate guide. It contains references to medical evidence, including a form of affidavit by a medical attendant.

Reports and Analytical Records.

(1) ATOCIN; (2) ATOCIN WITH ASPIRIN.

(CAVENDISH CHEMICAL CORP., LTD., 137, REGENT STREET, LONDON, W.1.)

1. Atocin is indicated for the treatment of rheumatism, gout, and lumbago. Whilst the introduction of salicylates was a notable step forward in combating the painful afflictions caused by the different forms of rheumatism, it left untouched many aspects of this malady. In recent years attention has been given to phenylcinchoninic acid and its derivatives—among which is atocin—and the clinical results obtained appear to be hopeful.

When analysed these tablets were found to contain a substance which possessed the properties of phenylcinchoninic acid with starch as an excipient. Each tablet weighs 9·38 gr., of which amount 7·5 gr. is atocin.

2. *Atocin with Aspirin.*—These tablets are used for the same purpose as atocin. When examined they were found to be compounded of 5 gr. of atocin, 2½ gr. of aspirin (acetyl salicylic acid), starch being used as an excipient. Free salicylic acid was absent.

ASPRO.

(ASPRO LIMITED, SLOUGH, BUCKS.)

Aspro is an acetyl salicylic acid preparation advocated for the treatment of headache, sleeplessness, neuritis, neuralgia, and feverishness. On analysis the following results were obtained:—

Weight of each tablet	6·1 grains.
Acetyl salicylic acid	79·0 per cent.
Starch	21·0 ,,
Ash	0·2 ,,

The tablets are well made, uniform in composition, and give no reaction for free salicylic acid.

THE LANCET.

LONDON, SATURDAY, NOVEMBER 19, 1927.

PROSTATIC OBSTRUCTION.

WE publish in consecutive issues two papers dealing with prostatic obstruction. Last week Mr. DAVID DAVIES and Mr. F. MCG. LOUGHNANE analysed a series of cases of suprapubic prostatectomy, and this week we reproduce the text of a Bradshaw lecture in which Sir CUTHBERT WALLACE reviews the progress of our knowledge and treatment during the last 40 years. Whilst operative technique has considerably advanced, he confesses that information about prostatic function and the pathology of enlargement is still very scanty. He favours the view—probably the prevailing one at present—that enlargement is due to the formation of multiple adenomata. If this is accepted, however, it remains a matter of controversy whether the adenomata appear in the prostate itself or in the submucous periurethral glands lying between the prostate and the urethra. It was in 1905 that MOTZ and PÉRÉARNAU first made the suggestion that "prostatic enlargement" is a misnomer and that the periurethral glands, and not the prostate, are really the site of the adenomatous growths. The investigations of Mr. DAVIES and Mr. LOUGHNANE lend some support to this theory, although the number of cases recorded is too small to give any great weight to their conclusions. They found that reappearance of prostatic tissue is the rule rather than the exception after suprapubic prostatectomy, and occasionally this reappearance is followed by a recurrence of symptoms, though this happens rarely.

Of the underlying causes of enlargement nothing is known, and Mr. DAVIES and Mr. LOUGHNANE merely revive a discarded theory when they point out that a past history of gonorrhœa was common in their series. Their view that gonorrhœa has some definite influence in precipitating hypertrophy does not agree with that of other observers; Mr. KENNETH WALKER, for instance, in his Hunterian lecture of 1922, went into the subject at some length, and among other arguments quoted experiences in Japan, where prostatic enlargement is almost unknown, despite the fact that gonorrhœa is common. It must, indeed, be admitted that so far we do not know what it is that makes the prostate enlarge in some men but not in others, and we are equally in the dark when it comes to finding an explanation of some of the sequelæ. As the Bradshaw lecturer points out, "the mechanism whereby the loss of efficiency of the kidneys is brought about is still unsolved." In most cases—even those in which there is a good deal of residual urine—the ureter has to work against only a very small pressure, and there is little to support the view, so commonly held, that inefficiency of the kidneys following prostatic obstruction is a result of back-pressure.

In reviewing the surgery of prostatic enlargement Sir CUTHBERT WALLACE discusses the advantages and disadvantages of the suprapubic and the perineal routes, and like most British surgeons shows a preference for the former. As regards technique he sees no great advantage in substituting an open operation for the older method of removing the prostate by the aid of tactile sensation alone. In this he is in agreement with Mr. DAVIES and Mr. LOUGHNANE, who argue that it is unjustifiable to prolong a severe operation in order to dissect away tags of mucous membrane and fragments of gland tissue, since post-operative obstruction can be dealt with by diathermy. All three writers, therefore, favour a simple rapid operation rather than the open method, with its elaborate toilets of the prostatic bed, whose advantages have been often urged of late years. Indeed, Sir CUTHBERT WALLACE seems to believe that an elaborate operative technique, followed by irrigation intended to reduce sepsis, actually increases the risk of secondary hæmorrhage. These conservative views must, however, be considered in the light of his admission that in his own hospital the mortality has not materially fallen during the last ten years; surgeons have become more chary of performing the one-stage operation, but at St. Thomas's this has only meant that deaths formerly recorded under "prostatectomy" are now found under the heading of "cystostomy." His own view is that hospital statistics can at present be improved only by getting patients to seek earlier help, and he believes that future advances are less likely to come from improvement in technique than from earlier diagnosis and prompter treatment. Whilst agreeing with him about the importance of these factors we find it difficult to believe that progress may not also be achieved through better knowledge of renal function, improvement in our measures against hæmorrhage, and reduction of sepsis, which is here of such importance. The death-rate from prostatectomy is lamentably high, and the fact that patients put off their application for treatment until their condition is dangerous must not discourage fresh attempts to improve technique and to find new ways of guarding against accidents that add so much to the danger of convalescence.

THE NOTIFICATION OF TUBERCULOSIS.

TWO purposes are served by the notification of an infectious disease. The first concerns the interest of the patient, the second that of the community. Delay in notification not only deprives the patient of the timely treatment upon which his recovery may depend, but also exposes his neighbours to unnecessary risk. No one questions these facts when the acute infectious diseases are concerned. Any laxity in the notification of small-pox is treated with the utmost rigour of the law. A doctor who fails to recognise diphtheria may need all the support that prejudice can supply if he is to escape a public censure. But when the notification of tuberculosis is in question no such concern is manifested. Though the patient's chance of recovery may depend upon early treatment and though the members of his household may be exposed to grave risks through their ignorance of the danger to which they are exposed, notification is neglected until it is too late to be effective either to stem disease or to prevent its spread. It is shocking that Dr. F. N. KAY MENZIES, medical officer of health to the London County Council, should have to report that 46 per cent. of the patients who died in the metropolitan boroughs in 1926 had either not been notified or had only been notified within three months of death. Dr. W. B. KNOBEL dealt with another aspect of the same question when, in addressing the Glasgow Conference [1] last year, he pointed out that 75 per cent.

[1] THE LANCET, 1926, ii., 90. Transactions of the National Association for the Prevention of Tuberculosis, July 1st–3rd, 1926. London: Geo. Pulman and Sons. P. 59.

of the patients admitted to the King George V. and Pinewood Sanatoriums were in a more or less advanced and irremediable stage of the disease when they first came under effective treatment

Consideration of the problem thus presented involves not only the doctor, but also the patient and the disease. The virulent types of "consumption," to which adolescence is prone, spread with such rapidity that frequently within a few weeks of the onset of the first symptoms large areas of both lungs may be involved. The chronic fibrotic type of the disease so frequently met with in the middle-aged has a far more insidious onset, is frequently masked by bronchitis and emphysema, and is not seldom unrecognised by either patient or doctor until a hæmoptysis or constant decline in weight arouses suspicion of some grave trouble. Nor is the doctor always responsible for delay in diagnosis. The dread of consumption, like the dread of cancer, often leads a patient to conceal his symptoms. The visit to the surgery is postponed because he fears a diagnosis of tuberculosis as a sentence of death. A pathetic anxiety to minimise symptoms, to deny cough, to explain that a hæmorrhage was only slight and obviously had its origin in the throat is characteristic of this type of consumptive. In striking contrast is the tendency of some who love to haunt dispensary waiting rooms—the woman of poor circumstances and in middle life, or the army pensioner in whose sputum tubercle bacilli have never been found. These magnify every symptom that can suggest a diagnosis of pulmonary tubercle and fear to lose their title to special consideration and sympathy among their fellows. It must be admitted, however, that when every allowance has been made the general practitioner is not free from responsibility for many of the delays in notification that are associated with tragic results. "Cough," says Dr. KNOBEL, "is a very common symptom and the symptomatic treatment of it must become almost automatic." Though time and skill are necessary for the diagnosis of early tuberculosis, a measure of common sense should prevent gross errors. A cough that persists for more than a fortnight and is accompanied by expectoration demands careful investigation in a patient of any age. A cough, however slight, accompanied by symptoms of lassitude or by loss of weight should obviously be regarded as a danger signal. The public laboratory is always available for the examination of sputum. The services of the tuberculosis dispensary are at the disposal of every practitioner. When these services are neglected the excuse that a crowded surgery does not permit of scrupulous care in the examination of every patient complaining of chest symptoms is not valid.

English law demands a verdict of guilty or not guilty. Scottish law provides a third alternative; unfortunately the Ministry of Health follows the practice of the English law. What should be the attitude of the practitioner who has taken all reasonable steps to arrive at a diagnosis and who yet remains in doubt? A diagnosis of pulmonary tuberculosis may deprive a patient of his chance of earning a livelihood and may plunge a whole household into despair. If made without sufficient evidence irreparable harm may result. Again, delay in diagnosis till the evidence is beyond dispute may jeopardise the patient's chances of recovery. A solution of the difficulty might be found in the provision of convalescent home treatment. This should be available as part of the antituberculosis scheme of every local authority. The convalescent home should provide treatment similar to that given at a sanatorium for early cases. If the superintendent were a tuberculosis officer of wide experience and if he were provided with means for the complete investigation of every case admitted for observation and treatment he would have little difficulty in deciding whether a patient might safely return home at the end of a few weeks or whether notification and transfer to a sanatorium should be arranged. Some useful experience is available. Five years ago the Ministry of Pensions allotted 200 observation beds for a closely similar purpose—namely, to determine the presence and activity of tuberculous disease in relation to previous military service. In a series of 500 cases observed at Orpington Hospital [1] there were 206 admitted with the provisional diagnosis of pulmonary tubercle in whom tubercle bacilli had never previously been found. In 75 of these the diagnosis was altered to some other chronic bronchial affection. In just one-third of the total cases no clear evidence of tubercle was found. In coming to a decision reliance was placed chiefly on clinical evidence.

RADIOLOGY AND RADIOGRAPHY.

THE amalgamation of the Rontgen Society and the British Institute of Radiology took place formally on Thursday (yesterday), when Sir HUMPHRY ROLLESTON, President of the Institute, delivered an address to celebrate its incorporation with the Rontgen Society, and in his opening words paid an eloquent tribute to the late Sir ARCHIBALD REID. It was to REID'S energy and no less to his personality and tact that the Institute owes its present home, and Sir HUMPHRY ROLLESTON'S hope that REID'S portrait might be placed in the museum or the hall of the Institute will be endorsed by all who preserve a memory of that inspiring personality.

The formation of a Radiological Institute was first suggested by the late DEANE BUTCHER some 20 years ago, and 10 years later was revived by a committee presided over by MACKENZIE DAVIDSON with Dr. ROBERT KNOX as secretary. The movement was heartily endorsed by the leaders of the Rontgen Society, and was then taken in hand by REID and other leaders in medical radiology. The main part of Sir HUMPHRY ROLLESTON'S interesting address was devoted to setting out the aims and scope of the institute which he summed up as follows: "It is to serve as a meeting place of all interested in the subject—medical men of every department, radiologists, physicists, technicians or radiographers, instrument makers and manufacturers, so as to form a centre for consultation and coördination, and as a bureau to supply information of all kinds at the service of provincial, overseas, and foreign colleagues as well as of those in the metropolis, and thus to have an international influence." These are large functions, but when we contemplate, in terms of medicine only, what a centre of radiology must now imply, it will be seen that the objects of such a centre have not been unduly multiplied. The introduction of X rays as a means of physical diagnosis in itself constituted an advance comparable with that due to the assistance of the microscope in pathological anatomy, while, though much remains to be ascertained about the therapeutic uses of radiation, not a year goes by without the addition of facts to our store of observations. And these observations are all the more

[1] A. Sandison and G. B. Price: An Account of Tuberculosis Observation Work, THE LANCET, 1924, i., 1195.

valuable because they are derived from the work of men in no sense engaged upon medical research as their prime interest. While medical applications of radiology are most important to our profession, its bearing on arts and sciences and industry generally, as well as on physics and biology in the widest sense, demonstrates the urgent need for the frequent association in team-work of scientific investigators along many lines. This point was made eloquently by Sir HUMPHRY ROLLESTON, who pointed out that in medicine the clinicians, pathologists, anatomists, physiologists, and biochemists have much to learn from radiologists, who in their turn will reap great advantage from close coöperation with colleagues and from an insight into kindred researches such as can be derived from common study and common sources of information. Hence the reference library, which was started by Lady MACKENZIE DAVIDSON'S generosity, and in memory of her distinguished husband, will be an important feature in the new centre, while reminding future workers in this special field of DAVIDSON'S position as an early leader in radiology, already recognised in the Mackenzie Davidson Memorial Lectures under the Rontgen Society and the Electro-Therapeutic Section of the Royal Society of Medicine. Equally essential to the development of radiology will be a museum containing a collection of radiographic films and lantern slides illustrating completely the normal and morbid anatomy and physiology of the human body. The Rontgen Society, now amalgamated with the Institute, was founded as far back as 1897, little more than one year after Rontgen's public announcement of his discovery, although for some time previously he had been engaged upon elaborate investigations in physics upon which that discovery was based. The union of the two bodies has been attendant, for this reason or that, upon long negotiations, but each will gain by the amalgamation.

The affiliation of the Society of Radiographers makes the Institute representative of the technical side of radiology and the difficulty of professional association with persons not appearing on the Medical Register has been surmounted. This Society was incorporated in 1920 with a view to giving a definite professional status to certificated non-medical assistants working in X ray and electro-therapeutic departments. With the formation of the Society an end was put to the confusion between the terms "radiologist" and "radiographer," the former term being reserved for members of the medical profession undertaking diagnosis and treatment by X rays and radium, the latter term designating their trained, but non-medical, assistants. As all know, the training of the radiographer is now a complex and elaborate affair, and their inclusion as equal members of a great amalgamation is right, and incidentally is a sign of the more liberal atmosphere in which scientific therapeutics are conducted to-day.

WOOLWICH AND GREENWICH HOSPITALS.—The Duke of York, who was accompanied by the Duchess, recently opened the first section of the Woolwich and District War Memorial Hospital at Shooter's Hill. The section, which stands in 13 acres of grounds, 400 feet above sea-level, and has cost £215,000, will hold 112 patients. There are four wards of 26 beds each, a maternity unit of six beds, and two isolation beds; sunlight and electro-therapeutic departments have also been provided. Two other sections will be required for the completion of the scheme, which will provide a total of 344 beds. In the Memorial Hall, lined with various coloured marbles, is kept a Book of Remembrance to preserve the names of 6230 local residents who lost their lives during the war.—Princess Mary has recently opened the new nurses' home erected by the Greenwich Board of Guardians in connexion with the Greenwich and Deptford Hospital. The home will house 139 nurses, and stands so high that it commands views of Westminster Abbey and St. Paul's Cathedral. There are three large recreation rooms, and tennis lawns are being laid out.—The Miller General Hospital for South London is to be extended at a cost of £38,000, and King Edward's Fund has promised to contribute £16,000 contingently upon the raising of the rest of the money.

Annotations.

"Ne quid nimis."

THE MAUDSLEY HOSPITAL.

THE enterprise and vision of the founders of the Maudsley Hospital have borne ample fruit, and mental hospital officers all over the country now watch its development with great interest. The third report covers the period Feb. 1st, 1925, to Dec. 31st, 1926, and reviews the financial situation for the first time. The outlook, we are glad to see, is hopeful. The expenses inseparable from the opening years are being reduced; the cost of living and consequently of maintenance has fallen, and the revenue from patients' contributions has increased in proportion to the total expenditure, so that less of the cost is falling on the rates. Steady expansion rather than innovation has characterised the last two years, and modifications in policy are being postponed until the results of the Royal Commission become evident. The Maudsley draws its patients from many sources, and the medical superintendent states that every single mental hospital near London has referred cases during the last two years. Nevertheless, these patients form only a small proportion of the whole. Three times as many come from general or neurological hospitals; many "failures and misfits" come from social organisations, but the number of all these put together is doubled by those referred from their own doctors. This justifies the claim of the medical superintendent that he has never heard it suggested that the hospital encroaches on the province of private practitioners. A topographical survey shows that distance is a powerful factor, and that the majority of out-patients come from the immediate vicinity. This department is now the largest organisation of its kind in the country, and increased by 50 per cent. between the second and third years. The number in 1926 (11 months) was 1208. While the most obvious function of an out-patient department is to act as a sorting-house for the wards, the Maudsley is able, by virtue of its large staff of experienced clinical assistants, to give treatment to an increasing though limited number of out-patients. The medical superintendent, however, is careful to point out the danger of exaggerating the possibilities of out-patient treatment, for which only a few types of patients are suitable. During the period under review 1100 patients were admitted to the wards. New admissions are nearly always put to bed in the open air, but when their need for rest is satisfied every effort is made to provide them with some interesting occupation. All patients do a certain amount of work in the wards, and the carpenter's shop turns out beds, tables, lockers, washstands, and other articles of equipment. Even patients confined in the wards are distracted from their worries by instruction in handicrafts, of which there is a very wide range. That the results are both useful and attractive is shown by the ready market which the products obtain, so that the occupational department costs nothing but the salary of its officer. Wide use is made of physio- and electro-therapy, and two full-time masseuses are employed. There is a Swedish drill class in the garden daily, and all varieties of special and re-educational exercises are taught. The almoner's department performs some of the most arduous work of the hospital, for it visits patients' homes, undertakes services for them outside, places them in lodging and situations, and generally tries to ease the stress of their environment as much as possible. Some report of the pathological work appeared in THE LANCET for Oct. 29th (p. 924), and recent work continues the attempt to accumulate evidence of general bodily disturbance in the psychoses. Those who are interested in mental hospital work should not fail to study the full report.

THE REMOVAL OF HOUSE REFUSE.

IT is certain that the arrangements made by the majority of local health authorities for the removal of house refuse are very unsatisfactory from the standpoint of sanitation. The emptying of the dustbins and the passage of insufficiently covered dust-carts down the streets are both responsible for many complaints, especially on windy days; and the sorting of certain of the contents of dustbins, which is permitted in some areas, adds to the nuisance complained of. In this connexion many local health authorities do not practise what they preach. They seek to impress upon the general public the sanitary need for keeping the dustbin contents covered, while they are themselves great offenders and are constantly presenting bad object lessons. Indeed, it would appear that in this country we attach less importance to hygienic scavenging than do our continental neighbours, for in not a few centres of population upon the continent very complete and costly provisions are made for entirely preventing such nuisances. This is achieved by providing dustbins of special size and shape and fitted with special covers. The filled dustbin, tightly covered, is taken away, and a clean empty one substituted. This hygienically satisfactory arrangement is much more costly to install and to operate than the less sanitary methods prevalent in this country. There would be a great difficulty in getting owners and occupiers to provide the more expensive special dustbins, and it is not likely that the local authority would be prepared to provide them; but any suggestion which takes this difficulty into account and which promises to abate a frequent source of nuisance ought to be thoroughly tested. Some instruction may be gained from a visit to the Public Works, Roads, and Transport Exhibition which remains open at the Royal Agriculture Hall, Islington, until 7 P.M. to-day (Saturday). Here may be seen a dust-cart of the most recent type [1] with low loading level and mechanical tipping gear, for which it is claimed that it makes the operation of collection and removal practically dustless from door to destructor. In this cart the roof has a series of openings on each side which are covered with light metallic shutters, each connected to a foot-bar a few inches above the pavement level. When the loader puts his foot upon these bars as he lifts the bin the shutters open, to close again so soon as the bin is emptied. It remains, of course, to be seen whether the act of filling is dustless in practice, but sanitary authorities will have no excuse for continuing the old insanitary methods when once the problem of a dustless removal is solved in a satisfactory way. No method, however, is likely to be regarded as satisfactory which calls for a more costly and special type of dustbin, or if its total costs would add much to the already heavy charge upon the rates of this particular public service.

GRASS DISEASE IN HORSES AND BOTULISM.

AT a recent veterinary meeting Prof. J. Russell Greig, of Edinburgh, attempted to explain the clinical symptoms of acute grass disease in horses as an excessive stimulation of the sympathetic nervous system, due probably to overactivation of endocrine glands. No bacterial toxin, he said, is known to be a specific sympathetic stimulant. Veterinary opinion is certainly crystallising towards the view that so-called grass disease in horses is not equine botulism. It is probable that some of the outbreaks of so-called forage-poisoning in horses and cattle are due to the formation of a botulinus toxin in spoiled ensilage. Further, it is known that the South African disease of cattle termed lamziekte is due to the ingestion of a botulinus toxin formed in the bones of cattle which have died on the veld, the tendency for the cattle to eat the bones being due to pica caused by phosphorus deficiency in the soil. A similar condition to lamziekte has been found in Tasmania and attributed to botulinus toxin. Quite recently it has been shown that a botulinus toxin formed in the dead bodies of rats in stables in South Africa is very probably the cause of illness and death in horses, and there is reason to believe that it may yet be shown that such circumstances may cause illness and death in cattle and horses in other countries. Grass disease symptoms in horses, however, bear little or no resemblance to botulism in horses as can be demonstrated by feeding or subcutaneous inoculation of horses with botulinus toxin. Such experiments have shown that the horse is comparatively insusceptible to botulinus toxin whether fed or inoculated. Horses which have been infected experimentally by botulinus toxin show paralysis with inability to rise, the tongue hanging out, and salivation, while the mental faculties as well as those of sight and hearing are retained to their normal extent and little or nothing can be found in the way of post-mortem lesions. This is analogous to human botulism, but quite unlike equine grass disease. Moreover, grass disease occurs under conditions in which it is impossible to demonstrate that the victims have had any fodder other than the grass they pick up when at pasture, a feature which in itself almost excludes botulism, which presupposes some place where the bacillus can grow and multiply and produce its toxins outside the body. Grass disease is strictly confined to certain localities, whereas the *Bacillus botulinus* is ubiquitous. If it were feasible for herbivorous animals to develop botulism by the ingestion of the bacillus at pasture with the subsequent development of the toxin in the alimentary canal there would be no herbivorous population left. It is possible to demonstrate the presence of *B. botulinus* in the alimentary contents of herbivora, but clearly they do not produce their toxins there. Filtration of alimentary contents with concentration of the filtrate and inoculation into animals has failed to demonstrate toxin in grass disease. To prove that botulism is the cause of an outbreak in animals one must demonstrate the toxin in the suspected feed or in the gastric contents of the animals which have exhibited symptoms, and these symptoms must bear a resemblance to experimental botulism in that species. On the above grounds it would appear that veterinary opinion is justified in concluding that grass disease is not botulism.

SPEECH TRAINING AND STAMMERING.

A DISCUSSION on Nov. 8th, the first day of the International Conference on Speech Training held in the lecture hall of the Royal Society of Arts, afforded an excellent example of coöperation between all those, medical and non-medical, whose work brings them into contact with the difficulties involved in speech production and particularly the treatment of the stammerer. Miss Elsie Fogerty, who on behalf of the Central School of Speech Training and Dramatic Art had organised the Conference, believes that speech and voice trainers should submit their practice to persons competent to judge the soundness of their physiological and psychological methods, and the selection of speakers accordingly included names well known in the specialties of laryngology and clinical psychology. Representatives of the clinics of the London County Council and of at least four speech clinics attached to general hospitals took part in the discussion, and the speakers are to be congratulated on offering a wide range of opinion which nevertheless included no incompatibilities and could be brought together under one general principle. The interest of speech defect, especially stammer, has to some extent passed from the *how* of its production to the *why* and, since the *why* is a problem of behaviour and problems of behaviour contain infinite factors, it was not surprising to hear one speaker dwell upon the stammerer's poor sense of rhythm and turn to hexameter verse and the fox-trot for hints as to his treatment, whilst another, in discussing the relation-

[1] Freighter dust-cart: special dustless loader type. Shelvoke and Drewry, Ltd., Letchworth, Herts.

ship of stammer and left-handedness, appealed to the Old Testament story of Ehud for proof that the people of those days recognised the rebellious and self-contained temperament of the left-hander. The speeches as a whole indicated a great advance in the understanding and treatment of a most distressing condition, and it is a pleasure to draw attention to the painstaking and unobtrusive work now being done on a disability that offers little opportunity for spectacular triumphs and yet affects the efficiency and happiness of many people.

THE TRIAL OF ADELAIDE BARTLETT.[1]

AT 4 A.M. on New Year's Day, 1886, Dr. Alfred Leach, of Charlwood-street, Pimlico, was called out to the lodgings of Mr. and Mrs. Edwin Bartlett in Claverton-street close by. He found the husband dead. The cause of death was a mystery till the post-mortem examination showed sufficient chloroform in the stomach to explain it. A few days earlier Mrs. Bartlett had obtained a supply of the drug through the Rev. George Dyson, a Wesleyan minister who was a close friend of the family and whose regard for Mrs. Bartlett had been by no means discouraged by her husband. Her reason for wanting the chloroform was, she said, that Mr. Bartlett suffered an internal complaint which caused violent paroxysms; it was essential to quiet and soothe him. Mr. Dyson bought 4 oz. of chloroform rather surreptitiously, but otherwise acted in a straightforward manner, and, when he found out that Mr. Bartlett's death was due to this drug and that the internal disease was a myth, he was honestly perturbed. Mrs. Bartlett gave to Dr. Leach a remarkable and entirely different explanation of her purchase of the chloroform. Suspicion naturally fastened upon her and a coroner's jury found her guilty of wilful murder, with Dyson as an accessory before the fact. At the trial at the Old Bailey the prosecution offered no evidence against Dyson, who thus became available as a witness for the Crown.

The Attorney-General, in his opening speech, addressed himself to the question how the chloroform got into the dead man's body. It might have been suicide, but there was no ground for supposing any such intention. It might have been swallowed by accident, but chloroform was a drug no man could take inadvertently. The only remaining possibility was that it had been administered by some third person. The theory, therefore, was put forward that there was first an external application inducing stupor and then a conveyance of the drug into the stomach while the man lay wholly or partly unconscious. The defence maintained the impossibility of such an operation, and the medical witnesses were examined and cross-examined at length upon their experience and opinion of so unusual an occurrence. The problem of motive was complicated by the strange story of her marital relations which Mrs. Bartlett had told to Dr. Leach, but the issue of the trial really depended solely upon the scientific evidence. The jury's verdict stated that the case was one of strong suspicion; nevertheless, they found her "Not Guilty." Dr. Leach, writing in THE LANCET in April and May of 1886, hazarded the suggestion that Edwin Bartlett drank the chloroform out of sheer mischief to alarm his wife. It is as good a guess as another. The jury was doubtless right to acquit Adelaide Bartlett; still, as Sir John Hall observes at the close of his admirable introduction, some of those who think so may yet agree with Sir James Paget's remark that, once it was all over, she should have told us, in the interests of science, how she did it.

Some of the counsel in the Bartlett case happily still survive—Sir Edward Clarke and Sir Harry Poland (though neither had then been knighted), and Mr. Mead, the police-court magistrate. Russell, the Attorney-General, was not at his best; perhaps he was distracted by the campaign over Gladstone's first Home Rule Bill, then beginning. Clarke, his opponent, had, with characteristic industry, applied himself assiduously to the scientific side of the case. As in the Penge murder charge nine years before, he realised that acquittal would depend upon his handling of the medical witnesses. His autobiography relates that for a fortnight before the Bartlett trial he put aside all other work, forensic or Parliamentary, and devoted himself to studying in the British Museum and in his own library all that had been written about chloroform. His final address to the jury is a masterpiece of eloquence and advocacy, and his client had good reason to write him the letter of gratitude which Sir John Hall prints in facsimile.

[1] Notable British Trials Series. Edited by Sir John Hall, Bart. London and Edinburgh: William Hodge and Co. 1927. Pp. 402. 10s. 6d.

CHRONIC INFECTIONS AS A CAUSE OF ASTHMA.

IT is well known that asthma is often associated with chronic infection of the bronchi or nasal sinuses. In a recent paper[1] Dr. John Eiman puts forward the theory that in these cases the disease is due to sensitisation of the body to bacterial and other proteins present in the infected secretions and reabsorbed through the inflamed mucous membranes. In a series of asthmatic cases he diluted the secretion from the bronchi or sinuses and passed it through a Berkefeld filter. The filtrates which were found to be sterile were called "secretion filtrates"; they mainly contained products of the splitting of the secreted proteins, with some autolysed bacteria and their soluble toxins. A small amount of secretion was also diluted with saline and 1 per cent. glucose, incubated for 48 hours, and passed through a Berkefeld filter. This was called "soluble toxin" and was chiefly composed of soluble bacterial toxins, together with products of the splitting of secreted proteins and some autolysed bacteria. Dr. Eiman further prepared vaccines from the chief organisms of the sinuses and bronchi. The patients were then given intradermal injections of 0·1 c.cm. of "secretion filtrate," "soluble toxin," and vaccine, and the following three types of reaction were observed: (1) Positive reactions to secretion filtrates and soluble toxins but not to vaccines; (2) positive reactions to soluble toxins and vaccines but not to secretion filtrates; (3) positive reactions to all three. Normal individuals received injections in each case to serve as controls, and only when the patient reacted positively and the control was negative were the reactions considered to be allergic. By the use of controls it was found that the positive reactions with "secretion filtrates" were reduced from 95 to 77 per cent., with vaccines from 96 to 13 per cent., and with "soluble toxins" from 100 to 4 per cent. Whenever an "allergic" reaction was given with any of the three preparations it was used in treatment, the severity of the intradermal reaction being a guide to dosage. "Secretion filtrates" were given every fourth day, with vaccines and "soluble toxins" alternating in the intervals so that the patient received an injection every other day. The dosage was gradually increased. By this means 54 patients out of 86 were said to be relieved, besides 18 who were improved. Dr. Eiman considers that half the people whose asthma cannot be traced to a supersensitiveness to animal and plant proteins, pollens, or foodstuffs, have been sensitised to the proteins of their own secretion. He points out that administration of the filtrates should be regarded as a merely symptomatic treatment of asthma and that the main object should be the elimination of infections. For this reason he uses the autogenous vaccines and "soluble toxins"; whilst in another paper in the same journal Dr. Edward McGinnis draws attention to the part which the surgeon can usefully play in the removal of septic foci before they have had time to sensitise the patient. In all investigations of this kind, however, it has to be remembered that almost any new treatment will

[1] Jour. Amer. Med. Assoc., Sept. 17th, p. 953.
[2] Ibid., p. 959.

relieve asthma in a large proportion of cases if it is sufficiently impressive to capture the victim's imagination.

HOSPITALS IN CHINA.

Dr. James L. Maxwell, executive secretary of the China Medical Association, has written three articles for the *China Medical Journal*, in which he deals with the position in which the hospitals in Southern, Central, and Northern China, and the medical schools throughout the country, have been placed owing to the present period of political disturbance and civil war. As regards the medical schools, he writes that out of a total of nine, five, or possibly six, may be able to carry on without serious hindrance: one will continue on a limited scale, and two will remain closed. The position produced by the interference with medical education is a very serious one, for there is a decrease of nearly 50 per cent. in the output of fully qualified doctors from the best medical schools in China, and it will be several years before the former figures, which were themselves far below the needs even of the mission hospitals in China for Chinese doctors, can again be reached. Many of the Government and other medical schools, too, are closed, and the majority are in a desperate financial condition. A crisis has thus arisen, for the mission hospitals, nearly 300 in number, are largely dependent on these schools for a supply of qualified men: already the foreign hospital doctors are carrying all the burden they can, and more than they should, and the prospect of an adequate medical profession for the country becomes more and more distant.

As regards the position of the hospitals under the Southern and under the Northern Governments, Dr. Maxwell summarises the whole position, and though there is no intention on his part to judge the political situation, the figures, he says, speak for themselves. Under the Southern Government, out of a total of 165 hospitals 21·2 per cent. are running more or less normally, as compared with 70 per cent. under the Northern Government, which is responsible for 70 hospitals; 34 per cent. are running under temporary arrangement in the south, and 24·3 per cent. in the north. Of the number of hospitals that have had to be closed, there are 33·3 per cent. under the Southern Government, and only 5·7 per cent. under the Northern Government. The province of Yunnan has been excluded from these figures, as no accurate information of the position could be obtained, and also Honan, for the position of which no one party can be held responsible.

AMERICAN UNIVERSITIES.

THE amazing progress of the medical schools in the United States, the princely benefactions of America to medical education in this and other countries, and the constant stream of students and teachers who pass to and fro across the Atlantic all combine to make American education a matter of real and in many cases of personal interest to an increasing number of medical men in this country. Medical education can never stand properly by itself, and though it does not say very much about the preparation of the doctor we can heartily commend to the careful consideration of all members of the faculty of medicine a pamphlet [1] in which the Academic Registrar of the University of London urbanely records his impressions of a visit to the universities in the United States which he paid last year under the auspices of the Laura Spelman Rockefeller Memorial. In a comparatively short time energy and enthusiasm have applied exceptional wealth to the building up of what Dr. Deller describes as the most impressive monument to a faith in university education which the world has yet seen. And the faith is widespread, for it leads, for good, to the exemption of all universities from local and federal taxation and, for bad, to the supposition that a university education must be open to everyone and hence to an unmanageable host of students. But out of this flooding with ill-prepared school-boys, many of them quite unfit for teaching of a university standard, is emerging a development of great interest—the post-graduate university—in which is visible a partial return to the old idea that the prime business of a university is to be a body of learned students occupied in the pursuit of knowledge rather than an organisation for teaching undergraduates, as modern heresy imagines. In this country universities, especially Oxford and Cambridge, are governed by about as pure democracies as ever have been; the autocratic rule of the American President is viewed, on the whole, favourably by Dr. Deller, but it is evident from what he says that the intellectual freedom of the teacher is still far from secure. Many students, he writes, are seriously handicapped in their thought and in their expression of thought and are unprepared for serious study of any kind by a lack of vigorous discipline in the use and value of words—a remark which will be sympathetically received by those who read the examination papers of English medical students. We mention only a few points; those who care for higher education should read the whole—without envy and without malice.

[1] Universities in the United States. By Edwin Deller, LL.D. University of London Press. 1927. Pp. 46. 2*s*.

NOISE AND OUTPUT.

THE influence of sound on mental and physical activity has been more talked about than studied; yet the sounds of modern life, by road or rail, in factory or in mill, are ever increasing in complexity and in kind. Although music has been used to increase output, in industries as well as in armies, it is generally held that the effect of irregular noise is to reduce efficiency. Thus Münsterberg[1] quotes the case of a woman in a printing shop whose work improved by 25 per cent. when she was removed from being near a passage where trucking was done, and Florence[2] instances a factory where the rate of absence for men was highest (6·8 per cent.) in the noisiest department, as compared with 6·5 for departments where air conditions were poorest, 6·4 where muscular strain was heaviest, and 6·3 where eye-strain was greatest, the rate in all these departments being in excess of an average for the whole factory, which was 6·1. More intensive investigations are now reported[3] from the Colgate University in the United States, where typists were set to work in a test-chamber containing a noise-machine which reproduced the environment of an ordinary business office. It made sounds like an electric motor, like a motor siren and a telephone bell, intermittently and automatically, and rotated ball bearings in an iron drum; in the test-chamber the effect was increased through reverberation. Working metabolism was measured every 15 minutes by collecting and analysing expired air, and the speed of work and errors throughout two-hour periods of work were carefully noted. Under quiet conditions the average time per letter typed had improved by seven seconds at the end of the two-hour period, but when the noise-machine had been in full blast the time at the end was five seconds longer than at the beginning. In other words, the artificial noise was found to inhibit any warming-up effect. Under these conditions it was noted that the faster the worker the greater was the harm done by the noise. Under quiet conditions, working metabolism was 52 per cent. higher than resting metabolism, but when the noise was turned on it became 71 per cent. higher, although the output of work was less. The 19 per cent. increase seemed to be expended in a general tenseness of the entire musculature. Somewhat unexpectedly it was found that the energy expended under noisy conditions did not increase as the work proceeded, and that

[1] Psychology and Industrial Efficiency, 1913.
[2] Economics of Industrial Fatigue, 1924.
[3] The Measurement of the Effects of Noise on Working Efficiency, D. A. Laird, Journal of Industrial Hygiene, October, 1927.

the difference between the amount of energy expended in the two environments was the same after two hours as it was at the beginning. The suggestion is made that noise should be considered as a possible contributory cause of neurasthenia and fatigue, and the experiments support conclusions which many people will have drawn from their own sensations while at work in noisy places. The experiment may not, however, give an accurate idea of the amount of damage done by ordinary noise. It is doubtful whether a machine can accurately reproduce the conditions of a factory or office, for its performance must always be attracting the conscious attention of the workers, whereas the hum of traffic and the familiar sounds of industry are hardly noticed by those who live among them.

THE HOSPITAL PROBLEM OUTSIDE LONDON.

THERE are few departments of the national activity in which statistics are of greater practical value than the vast field covered by the voluntary hospitals, and there is no more illuminating compendium of facts and figures relevant to those institutions outside London than the annual report issued under the auspices of the Order of St. John of Jerusalem and the British Red Cross Society. The report for 1926, the work of Mr. R. H. P. Orde, the Director of Hospital Services of the Joint Council of these institutions, which has been issued this week, is a frank and suggestive document, which not only bristles with figures, but discusses some of the most difficult of the outstanding problems affecting the future of the voluntary hospitals. Perhaps the most important of these problems is the nature of the relationship which seems likely to be established between the voluntary hospital and that provided by public authorities, and the Joint Council recently asked the administrative officers of certain large provincial voluntary hospitals to state their personal views on the subject. Their answers form an appendix to the report. They are very varied in character and form a curiously interesting conspectus of the opinions of a number of experts looking upon the same subject by the light of long and varied experience. The main point upon which there is general agreement is that the voluntary system must be preserved at all hazards, though one or two of the commentators are inclined to think, or fear, that anything in the nature of fusion or coördination between the voluntary hospitals and the poor-law or municipal institutions would result in serious disadvantage to the former, or even to their ultimate extinction. Mr. Frank G. Hazell, general superintendent and secretary of Manchester Royal Infirmary, goes so far as to declare that "relationship between the two is constitutionally impossible."

Much stress is laid upon the traditional and ingrained "dread" of the poor-law institution because of its "pauper taint," but any system of coördination such as has been dimly envisaged by Mr. Neville Chamberlain would necessarily be founded upon the removal of that taint. Many suggestions are made for meeting the pecuniary difficulties which too often surround the work of voluntary hospitals—grants in aid from the State; loans for capital purposes, free of interest, repayable over a series of years; grants from the Road Fund on account of motor accidents; the general adoption of an efficient contributory system; contracts between the public authorities and the hospitals to do certain kinds of work for an agreed sum. The last-mentioned system is already in operation in Oxfordshire and Berkshire, with the result, as the Rev. A. G. E. Sanctuary, of the Radcliffe Infirmary at Oxford, reminds us, that the Radcliffe has been able to maintain a maternity department which has greatly reduced the infant mortality-rate in the city of Oxford. The cost to the Oxford council is £1000 a year, a bagatelle compared to the amount it would have to expend to maintain its own system upon lines of equal efficiency. There is, however, a considerable agreement that, given a reasonable working system of coöperation, there is room for both forms of institution, and that the adoption of such a system would avoid the need for much further extension of the voluntary hospitals, which would thus be enabled to concentrate upon improvements and increased efficiency.

Coördination almost necessarily involves some differentiation of function between the two types of hospital, and the administrators who have contributed to this valuable symposium are, in the main, of the same opinion as the medical profession, that the municipal institutions should, among other things, take chronic, infectious, and incurable cases, the voluntary ones being reserved for cases of obscurity or difficulty requiring a high degree of technical skill, special diagnostic facilities, and so on. They would also treat all accidents and emergencies, and would devote themselves with greater diligence than ever to teaching and research. Another matter upon which stress is laid by more than one writer is the desirability of some scheme of central control for the avoidance of overlapping and the clear definition of function, which might not be identical in every instance. The paying patient, for example, might sometimes be more conveniently dealt with in the municipal than in the voluntary hospital, and some authoritative means might be needed for deciding the choice. Amid these diverse views one fact stands out—the medical staffs as a whole are strongly in favour of the preservation of the voluntary system with the working of which they are so intimately associated. That is not to say that they are oblivious of the powerful help to the health of the nation which could be afforded by the rate-aided institutions were they linked up with those which depend for their usefulness upon public benevolence and systematised public recognition of the services which they render. The problem of how best to forge the link is assuredly not insoluble.

THE DENTAL BOARD.

Sir Francis Acland gave a brief account of the Dental Board's educational work at the opening of the thirteenth session of the Board on Nov. 8th. Of over 50 students financially assisted throughout their curriculum, all but six or seven, he said, were now in public or private practice; furthermore, 150 out of 170 ex-Service men assisted by Government grants were also established practitioners. The standard of applicants for bursaries is satisfactory enough, although, as the Board's Registrar points out in his letter on p. 1100, the number of applicants is still insufficient to supply the probable need for dental practitioners, and steps are being taken to make the offer of financial assistance more widely known. The remaining part of Sir F. D. Acland's address was largely taken up with considering the education of the public in dental hygiene. The Board's travelling dental exhibits had, he said, been in great demand, railways and tram services were displaying educational posters, and an intensive campaign conducted in a northern county had resulted in surprising sale of tooth-brushes and creams. On the vexed question of dental clinics the Chairman of the Dental Board made no pronouncement, preferring no doubt to await the report of the special committee appointed by the Minister of Health. Finally, he expressed some surprise at the number of cases in which disciplinary action of a sort was being required. The few delinquencies coming before the Board this session were chiefly matters of advertisement, canvassing, or insobriety, but the Registrar spends no little time in bringing home to individuals the pains and penalties of practising dentistry without being on the Dentists Register.

Sir Arthur Keith, F.R.S., will take the chair at the third annual Norman Lockyer lecture, to be given by Dean Inge in the Goldsmiths' Hall on Monday, Nov. 21st, at 4 P.M. The subject will be Scientific Ethics.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCL.—THE TREATMENT OF POST-PARTUM HÆMORRHAGE.

II.* FROM LACERATION.

THE characteristic feature of this type of post-partum bleeding is that it occurs with a firmly retracted uterus, which is easily felt and grasped in the abdomen. The bleeding is not rapid and severe, but appears rather as a steady trickle that, if not checked, may in time give rise to serious symptoms. Should it be accompanied by immediate and marked collapse, it would suggest rupture of the uterus or an extensive laceration of the cervix extending into the base of the broad ligament. Inversion of the uterus, also associated with symptoms of shock, is excluded by the presence of the firmly contracted uterus in the abdomen. Sometimes blood collects in the distended vagina, especially in the posterior fornix, and escapes slowly, so that the state of affairs may not be immediately obvious. For this reason it is a sound practice when there is a steady trickle of blood to press down the retracted and empty fundus uteri at intervals so as to express any blood or clot that may have collected in the vagina. Should each expression result in the expulsion of blood and a mass of clot, it will be almost certain that the hæmorrhage is from a laceration of the cervix or other part of the genital tract. Bleeding from the vulva or vestibule is readily detected by inspection.

Causation and Preventive Treatment.

Trauma of the soft parts is most likely to occur in difficult and instrumental labours, especially those due to malpresentation and misfits. Rapid delivery through incompletely dilated soft passages always carries with it the risk of extensive laceration. One of the reasons why so much emphasis is laid on not attempting delivery by the forceps till the cervix is fully drawn up over the head, and on slow delivery in placenta prævia once compression of the placental site had been secured, is the serious hæmorrhage that may result from lacerations produced thereby. The soft parts about the vestibule and round the pubic arch may be cut cleanly by pressure of the blades of the forceps or other instruments against the hard bone. The tearing of soft parts, such as the perineum, by overstretching is rarely associated with bleeding of any moment, as the vessels are torn rather than cut. Occasionally similar accidents may arise in a natural labour, particularly if associated with strong pains and rapid expulsion. Early rupture of the membranes followed by rapid completion of the labour by the natural powers may result in cervical and vaginal tears, but here again serious bleeding is very unusual because the tissues are not clean cut.

The *preventive treatment* is obviously to avoid as far as is possible by careful antenatal supervision the complications of labour likely to give rise to laceration, and to refrain from rapid delivery through the insufficiently dilated soft passages.

Treatment.

Treatment, when the condition has arisen, must depend on the severity of the hæmorrhage, the site of the laceration, the circumstances in which the labour is conducted, and the facilities available. Bleeding from clean-cut lacerations of the vestibule, or vagina near the outlet, which can be easily seen and reached, may be controlled by underrunning with a catgut stitch, either mattress or double cross-stitch. Similar treatment would clearly be best in all cases of bleeding of more than a minor degree were it not that a thorough investigation of the higher reaches of the genital tract is difficult and requires good exposure, good light, skilled assistance, and often difficult manipulations in circumstances that are a great handicap to success. Hence it is essential that full consideration be given to what is possible and effective as well as to what might be done under hospital conditions.

When the bleeding is not severe, and is represented by a pooling of blood in the vagina, which trickles out at the vulva in a slow stream and is expelled as clot and fluid blood by occasional expression, a vaginal douche as hot as the woman can bear, or if she is anæsthetised, at a temperature of 115–118° F., should be given at once. That will usually suffice unless a large vessel is divided, but before leaving the patient, time should be given to make sure that blood is not collecting again in the vagina.

In the more serious cases, and when the douche is ineffective, the next procedure to be adopted must be determined by what is possible in the circumstances. The best would be to give an anæsthetic and, with the patient in the lithotomy position and a weighted speculum of the Auvard type in the vagina, to examine the cervix and vaginal fornices thoroughly, discover the source of the bleeding, and suture the laceration with catgut. Even under the favourable conditions of a hospital, with an electric headlight and skilled assistants to retract and sponge away the blood that obscures the bleeding area, this may not always be a simple matter, though generally the cervix can be brought down by volsellum forceps and sutured. The difficulty is greater with lacerations running out into the vaginal vault or up into the lower uterine segment. To advise measures of this kind for ordinary family practice would be a counsel of perfection that could rarely be followed. The hæmorrhage, however, can always be controlled by firm packing and pressure downwards on the retracted uterus. Either with the woman on her left side, or, if there is adequate assistance, in the lithotomy position, the vaginal vault is stuffed tightly with sterile gauze or an improvised and boiled dressing, and with a hand on the abdomen the uterus is pressed firmly down on the plugging, whilst the gloved fist of the other hand presses the dressing up against the cervix and vaginal vault for a time till more material is ready to be inserted; once it is in place, the compression between the hands is resumed, and this packing goes on till there is a tight vaginal plug against which abdominal pressure can be made, a tight binder over a graduated compress being applied to maintain it. If the bleeding is serious and time is needed for the preparation of the dressings, it may be controlled for the time being by a form of bimanual compression, in which the gloved fist, covered so far as possible with a sterile soft dressing, is pressed up against the vaginal vault and lower part of the uterus, whilst the external hand presses the body down on it, till time is gained for a more permanent method of compression by plugging. In other words, if the bleeding area is high up, the best plan is to exercise pressure manually over a wide area of the vault till it is possible to devise some other means of continuing the compression. If the laceration extends into the lower uterine segment, and even if it is complicated by prolapse of bowel, firm plugging, after return of the prolapsed intestine, is the best emergency measure.

Sometimes it may be possible to carry out an intermediate plan, by getting hold of the torn cervix or vaginal vault with volsellum forceps (or other forms of forceps or clamp) and checking the bleeding by the pressure of the forceps or by applying traction upon it, and leaving it there till arrangements can be made for a more effective control by suture. When the possibilities of infection are considerable, plugging is safer than suture, for it leaves a free exit for discharges. Infected wounds are best left to granulate, and the first thing to be done, should infection occur after stitching a tear, is to remove all sutures to allow the escape of discharge.

Indeed, in all severe lacerations that call for suture, once the hæmorrhage is under control it is best to postpone any further interference till adequate

* Part I., Placental Post-partum Hæmorrhage, appeared last week.

assistance and suitable conditions can be arranged. In such an accident as a perineal laceration involving the rectum, it is better to adopt temporary measures where conditions are unfavourable, and postpone the suturing for 12 hours or so, rather than try to make the best of a bad job in the middle of the night with a poor light and no skilled assistance. In circumstances such as these, and in procedures where accurate suturing is essential, the risk of failure is lessened by waiting till satisfactory arrangements can be made, and increased by attempting a difficult task under unsuitable conditions.

The treatment of post-partum hæmorrhage from laceration may be summarised by saying that when it does not yield to a hot douche, compression by a plug is better than the theoretically more efficient suture in all save wounds which are low down and easily seen. Suture of tears through the cervix into the base of the broad ligament may fail to achieve its object, because when the cervix is drawn down, the uterus comes down with it, but not the parametrium, and the vaginal walls may be sutured and bleeding continue into the space above. On the other hand, the attempt to close the space by encircling it with a curved needle runs the risk of including the ureter. Some 20 years ago Fritsch stated that, as the result of observations on cases in which secondary operation or post-mortem examination had been done, bleeding was checked by suture only in those cases in which it would have ceased without it. As plugging is not always well done and much blood may be lost during preparations and insertion, he urged that for immediate treatment the best plan was to grasp the labia majora in the left hand and press the relaxed pelvic floor upwards into the pelvis, whilst the right hand pressed the uterus deeply into the pelvis so as to compress the bleeding surface between the two hands. This pressure can be maintained for half to three-quarters of an hour, and has the advantages of immediate applicability, compressing the bleeding surfaces so as to leave no dead spaces in which blood may accumulate, and being entirely extra-vaginal, so that the risks of infection are greatly lessened.

As both plugging and suture, particularly the latter, may be followed by the formation of a hæmatoma, the warning may be given to watch for swellings in the broad ligament that may come up over the pelvic brim and appear as a hard mass on that side of the middle line on which the laceration has occurred. Also if a douche is given it should be under low pressure, with the patient's hips low and the body propped up, and no poisonous chemical should be used. Heat is the agent in checking hæmorrhage. Absorption from extensive raw areas is rapid, and communication with the peritoneal cavity is a possibility to be borne in mind in serious lacerations. If there is prolapse of bowel, or other definite evidence of a rupture into the peritoneum, plugging only should be adopted.

JOHN S. FAIRBAIRN, B.M. Oxf., F.R.C.P. Lond., F.R.C.S. Eng.,
Obstetric Physician, St. Thomas's Hospital.

MEDICINE AND THE LAW.

Infanticide Act: "Newly Born Child."

WHEN Parliament passed the Infanticide Act in 1922 critics observed that the language of the statute was too indefinitely expressed. A woman might be found guilty of infanticide instead of murder if, upon trial for the murder of her newly born child, the jury were of opinion that she by some wilful act or omission caused its death, but that, at the time of the act or omission, she had not fully recovered from the effect of giving birth to the child, and that, by reason thereof, the balance of her mind was then disturbed. This enactment, said the critics, was strangely vague. What is a "newly born child"? What is the meaning of "not fully recovered"? Some light has now been thrown upon the first of these two questions, for the Court of Criminal Appeal has decided that Mr. Justice Talbot was quite right in holding recently at the Central Criminal Court that a baby a month old could not be deemed "newly born." It had been proved at the trial that the baby was born on August 19th. The mother confessed that on Sept. 21st she "put a napkin round the child's neck and twisted it because I had nobody to mind him and no money." It was contended on her behalf that the jury should have been allowed to say whether or not the child was newly born within the meaning of the Act, whether or not the mother had fully recovered, and whether or not her balance of mind was disturbed by her recent confinement. Counsel urged that mental disturbance normally continued for six weeks after confinement; puerperal insanity and melancholia might appear at any time up to six or eight weeks after the birth. The Lord Chief Justice, however, said that it was not enough to argue that the mother had had a child and had not fully recovered from her confinement; the word "newly born" could not be ignored. Unless the child were "newly born," the jury could not find a verdict of infanticide. The court was not proposing to define "newly born child," but it was satisfied that a child of more than a calendar month in age was not newly born within the meaning of the Act. It thus appears that Mr. Justice Shearman was wrong when, in the case of Rex *v.* McConnell, tried at the Reading Assizes four years ago, he allowed the question whether a child six weeks' old was "newly born" to go to the jury for decision. When, following a suggestion by the late Dr. J. W. Ballantyne, of Edinburgh, the medical profession employs the term "neonatal mortality," it is referring to mortality in the first month of postnatal life. It might be helpful if the legal profession would adopt some similar standardisation of language.

The Infanticide Act was passed to end the grim farce of sentencing women to death for child murder when everyone in court knew that the Home Office would refuse to allow the capital sentence to be carried out. Judges disliked the situation acutely. Lord Loreburn proposed, about 20 years ago, to end the difficulty by giving a judge power to say that child murder was merely manslaughter. Subsequently Lord Alverstone brought in a Bill to allow judges to record the death sentence in such cases without pronouncing it in open court. Neither of these proposals became law.

Death of Mr. Harnett.

Mr. William Smart Harnett, remembered for his long litigation against members of the medical profession, was found drowned in the Union Dry Dock at Poplar on Nov. 10th. It has been stated in the daily press that, in consequence of that litigation and the inquiry which followed it, Parliament passed legislation in 1925. If this is so, it was a somewhat remote result. The Act of 1925 amended not the Lunacy Act but the Mental Deficiency Act of 1913. The statute of 1913 permitted a judicial authority—i.e., a county court judge, stipendiary magistrate, or specially appointed justice—to make an order placing a mental defective in an institution for detention or under guardianship. The Act further created machinery whereby a person already under guardianship could be transferred to the greater restriction of detention in an institution; but it omitted to provide for the converse operation of transferring a person from detention to guardianship. The 1925 Act remedied the omission. It was supported by the Central Association of Mental Welfare and by all who realised that, after a period of detention, persons are often so greatly improved in health that they can advantageously be transferred to guardianship—which, incidentally, is a more economical form of maintenance. But this rectification of a statutory omission hardly arose from the facts in Mr. Harnett's case; indeed, the changes in the law which that case indicated as desirable seem still to be far off.

Special Articles.

ON THE NUTRITIVE VALUE OF BREAD,

WITH SPECIAL REFERENCE TO ITS CONTENT IN VITAMIN B.

BY W. CRAMER, D.SC. EDIN., M.R.C.S. ENG.,
AND
J. C. MOTTRAM, M.B. LOND., D.P.H. CAMB.

IT has been said with truth that the food problem is the bread problem. The reason for this statement is that bread, like all cereal products, furnishes the most nutriment for its cost. Bread is consumed more regularly and in greater bulk than any other article of diet. The diet of the working man has been calculated to include on the average about 1¼ lb. of bread a day, representing about 60 per cent. of the total protein intake. Wheat, like most cereals, is rich in vitamin B, so that formerly the bread made from the stone-milled flour was presumably an important supply of vitamin B in the human dietary until the introduction of roller mills, about 40 years ago. The introduction of the roller mills and the almost exclusive use in this country of the fine white flour for the baking of bread has changed the situation completely. Observations are recorded in the literature (Osborne and Mendel, 1919) which show that the water-soluble vitamin B is not evenly distributed throughout the wheat grain and that the fine white flour now used almost exclusively in this country for human consumption is practically devoid of this vitamin. It would appear to follow that white bread is no longer an important supply of vitamin B in the human dietary in this country. Against this conclusion it has been argued that the deficiency of vitamin B in the white flour is made up by the yeast used in baking, since yeast is supposed to be exceptionally rich in this vitamin, and experiments have been recorded (Hartwell) which are supposed to confirm the contention that white bread contains a considerable and adequate amount of vitamin B. This contention was in such striking contrast to observations by previous observers (Hawke, Smith, and Bergheim) as well as one of us (W. C.) that in view of the outstanding importance of this subject a detailed investigation of this important problem seemed called for.

The recent work of Goldberger makes it necessary to define vitamin B. This author has shown that the water-soluble vitamin B contains two substances, one which can be recognised by its antineuritic action and by its rapid effect on growth, and another one which has a more delayed action on growth and which cures or prevents a condition in animals which he believes to be identical with pellagra in the human subject. This work has been confirmed recently by Chick and Roscoe. Goldberger speaks of the first-named substance as vitamin B proper. Since all the past work on vitamin B is based either upon the antineuritic effect or on the rapid effect on growth, this definition, which does not involve any alteration of recorded observations, appears to us to be the right one, and we have adopted it.

It is well known that wheats of different origin show differences in their chemical composition and in their physical characters. According to Bell and Mendel, they vary also in their vitamin content. They found that Marquis spring wheat contains two or three times more vitamin B than Minnesota winter wheat. Since such differences might introduce a fallacy it seemed essential to work with milling products of known origin and representing a fair average. We were fortunate in enlisting the interest of the directors of Hovis, Ltd., in this investigation, so that we were able to work with different milling products of known origin and also with bread baked with materials of known origin and in known quantities. We are especially indebted to Mr. A. E. Cressall, one of the directors of Hovis, for assisting us with his technical knowledge of the subject.

A brief account of the process of milling is necessary for the understanding of the problems involved. The following account is based on data supplied to us by Mr. Cressall. The wheat grain consists of endosperm which makes up the bulk of the grain, about 77 per cent., the embryo, which constitutes only 2 per cent. of the grain (and is richer in fat than the endosperm), and the husk. The latter is made up of two layers, which are fused together—namely, the pericarp or modified ovary wall, and the testa or seed coat. Immediately underneath the testa or seed coat is a layer of differentiated cells, the aleurone cells. In the process of milling the grain is disrupted and a number of materials are obtained from it which are separated from each other by the size of the sieve through which they are made to pass. In this manner the particles which go through the finest mesh constitute white flour, of which about 70 per cent. of the whole grain is obtained. The next coarser material is called "sharps" or "middlings," and in the main this is made up of the inner skin of the grain together with the aleurone cells, with a slight admixture of endosperm and also of embryo. The coarsest material is the "bran," which is essentially the outer skin, again with a slight admixture of the wheat embryo. The bulk of the embryo is separated from the other materials owing to its fatty nature. This product, in which a considerable amount of endosperm remains adherent to the embryo, is called technically the "germ." Thus as a result of milling one obtains the different materials in the following proportions:—

	Per cent.		Per cent.
White flour.. ..	70	Germ	1½–2
Sharps or middlings	14	Loss	½
Bran..	14		

All the milling products except white flour are sold as offal and used for cattle food, except where wholemeal or germ flour is being used for special kinds of bread. The white flour may again be graded in the process of milling according to the requirements of the trade. The finest white flour is called "Patent." This represents 60 to 75 per cent. of the total white flour extracted in milling. "Straight run flour" is simply the total ungraded white flour as obtained in the milling.

The first observations on the subject recorded in the literature (McCollum and Davies; McCollum, Simonds, and Pitz) emphasised the richness of the wheat grain and especially of the wheat embryo in vitamin B, as little as 2 per cent. of the wheat embryo in a diet otherwise free from this vitamin being sufficient to maintain growth over a long period in rats. This represents an actual weight of about 0·2 g. of wheat embryo. Further investigations on the vitamin content of the various milling products were made by Chick and Hume, who used pigeons as test objects, and compared the amounts of the various milling products necessary to protect against and to cure respectively avian polyneuritis which sets in when the birds are kept on a diet of polished rice. They found wheat germ to be richest in vitamin B; next came bran, while white flour was so poor in vitamin B that by itself it was unable even to protect birds against polyneuritis or man against beri-beri. Several examples of beri-beri occurring in civilised communities living on a diet which was for some special reasons restricted, and in which white bread was the only cereal product consumed, are given in the Medical Research Council's Report on the Accessory Food Factors. The vitamin content of wheat germ as measured by its antineuritic potency is very high; Chick and Hume found that a dose of 2·5 g. and occasionally 1 g. wheat germ was sufficient to cure a pigeon showing fully developed symptoms. It is richer even than yeast, which is generally held to be exceptionally rich in this vitamin. For pressed yeast Chick and Hume found 3–6 g. to be the curative dose in pigeons.

Bell and Mendel estimated the vitamin B content of the various milling products—namely, "Patent flour"—i.e., white flour—"first and second clear,"

"low grade and bran" and "standard middlings" and compared them with the vitamin B content of the whole grain. Their observations, which were made on mice, were carried out so as to give the amounts of the various milled products which had to be added to a vitamin B free basal ration in order to supply the amount of the vitamin necessary for growth. This was 15 per cent. of the whole diet for spring wheat, and 40 per cent. for winter wheat. White flour was found to be so poor in this vitamin that it would have been necessary to give nothing but white flour—i.e., 100 per cent. of the diet in order to supply the animal with an adequate amount of vitamin B. Such a diet would be deficient in other respects and unable to maintain the health and growth of an animal. Compared with the whole unmilled grain, first and second clear were found to have the same content in vitamin B, "low grade and bran" were twice as rich, and "standard middlings" four times as rich as the whole grain. The standard middlings are stated to have contained most of the embryo. The germ itself was found by Osborne and Mendel to be the richest part of the grain in vitamin B, thus confirming Chick and Hume's observations. The germ, in spite of its smallness, was found to contain as much as one-sixth of the total amount of vitamin B present in the grain.

In the experiments referred to above, except those of Bell and Mendel, no detailed description of the various milling products is given, nor what percentages of their products were obtained from the milling of the whole grain. In the experiments to be recorded standard wheat was used consisting of:—

	Per cent.		Per cent.
No. 1 N. Manitoba..	20	Plate	30
No. 2 ,, ..	20	Australian	10
No. 3 ,, ..	20		100

From this the following products obtained by milling were investigated: white flour, 70 per cent.; middlings, 14 per cent.; bran, 14 per cent.; and germ, 1½–2 per cent.

The experimental details were as follows: Rats from 70 to 100 g. were used for these experiments. Their weight and temperature were taken once weekly, always at the same time. They were kept on a basal ration completely free from vitamin B and consisting of casein (especially purified), starch, olive oil, and the usual salt mixture, to which was added cod-liver oil. On such a diet the animals gradually pass into the marasmus characteristic of vitamin B deficiency, which deepens progressively as manifested by cessation of growth, followed by loss of weight and accompanied by a progressive lowering of the body temperature. The lowering of the temperature is in our opinion a more sensitive indicator of the absence of vitamin B than the weight, provided that the animals are kept in a room kept at a fairly even and warm temperature. It does not seem to be sufficiently appreciated that the temperature of the animal room is an important factor in determining the rate at which a deficiency in vitamin B affects the organism. The animals were kept on the basal vitamin B free ration until the body temperature had fallen to about 36° C. Then the material to be tested was added to the basal ration. If the temperature returned to the normal in two weeks, and the weight increased, the result is stated as "complete recovery." If the normal temperature was regained after a lapse of more than two weeks the result is stated as "slow recovery." If the normal temperature was not regained the result is "no recovery." In our experiments the changes in the weight curve corresponded almost always with those in the temperature curve. In each experiment three rats were fed together in the same cage on the same diet. The germ used was sterilised germ, as used in the preparation of Hovis flour. Experiments with fresh germ showed that the method of sterilisation employed in this process did not materially decrease the vitamin B content of the germ.

The results are shown in Table I., which gives the amounts per rat of the various milling products added to 10 g. of the basal vitamin B free ration.

White flour contains so little vitamin B that the addition of as much as 7·5 g. to 10 g. of the basal ration per rat was unable to produce even a slow recovery. It may therefore for all practicable purposes be considered to be free from vitamin B.

TABLE I.

Wt. of germ.	Recovery.	Wt. of middlings.	Recovery.	Wt. of bran.	Recovery.
g.		g.		g.	
0·2	Slow	0·5	Slow	0·5	None
0·5	,,	0·5	,,	1·0	,,
0·5	Complete	1·0	Complete	1·0	Slight
1·0	,,	1·5	,,	1·0	Slow
1·5	,,	2·0	,,	1·5 2·0	Complete

The vitamin B content of yeast is of importance in connexion with the vitamin content of the various kinds of bread. In the Medical Research Council's report of vitamins it is stated that a rat on a vitamin B free ration requires the addition of 0·1–0·2 g. of dried yeast. This amount corresponds to 0·5–1·0 g. of fresh yeast as used for baking. For polyneuritis in pigeons the curative dose is given as 3·0–6·0 g. of pressed yeast, a dose more than twice as high as that of wheat germ (1–2·5 g.). Dunham gives 0·5 g. of dried yeast as the dose necessary to re-establish completely growth in young rats kept on a diet free from vitamin B. According to Kennedy and Palmer the vitamin B extent of yeast obtained from different sources as tested in rats varies considerably. They state "our results do not support the general belief that yeast is an unusually valuable source of vitamin B." One of the most satisfactory preparations tested by them was a baker's yeast, of which 0·6 g. of the dried material was required to establish satisfactory growth. A comparison with wheat embryo showed that the latter was a most reliable source of vitamin B. Drummond, McCollum, Hawk, and collaborators have given similar figures of 0·6 g. of dried yeast. Our own observations on rats were made with dried baker's yeast, dried at 100° C. An amount of 0·5 g. of dried yeast equal to 1·5 g. of fresh yeast was found necessary to ensure complete recovery from vitamin B deficiency. Taking all these observations together, we shall therefore not understate the vitamin B content of fresh yeast as used for baking if we put it equal to that of sterilised wheat germ, of which, as stated above, 0·5 to 1 g. are required. It may be pointed out that these absolute values are actually more in favour of yeast than the relative values given by the report of the Medical Research Council, p. 41, where the vitamin B content of yeast is given as representing only 60 per cent. that of wheat germ.

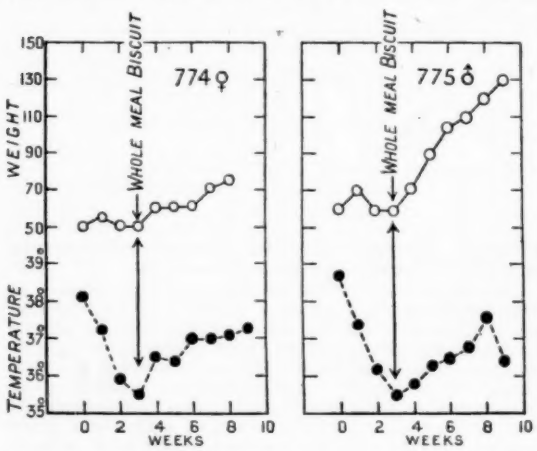
TABLE II.

—	White bread.		Wholemeal bread.		Hovis germ bread.	
	A.	B.	A.	B.	A.	B.
Patent flour ..	98	0	70	0	74	0
Middlings ..	—	—	15	750	—	—
Bran	—	—	12	400	—	—
Germ	—	—	1	100	24	2400
Yeast	2	200	2	200	2	200
Total* ..	—	200	—	1450	—	2600

A = Percentage amount } of milling products and of yeast.
B = Vitamin B content }
* Vitamin B content in 100 g. dried bread.

These data enable us to compare the vitamin content of the various kinds of bread: ordinary white bread, wholemeal bread, and germ bread made of Hovis flour, which contains one part of sterilised germ and three parts of patent flour. Vitamin B is so resistant to moderate heat that, as pointed out in the report of the Medical Research Council, the loss resulting from

the process of baking is only slight. If we put the vitamin content of 1 g. of wheat germ as 100, then middlings are 50, bran 33, white flour 0, yeast 100. The amount of yeast added to flour in the baking of



bread is 2½–5 lb. per 280 lb. of flour—i.e., a maximum of 2 per cent. as given in Table II.

These figures offer a striking comment on the statement which has been made repeatedly that the absence of vitamin B from white flour is of no practical importance, since in the process of baking yeast is used which is supposed to be so rich in the vitamin that it makes up for its absence in the flour. This statement is obviously made without any quantitative consideration either of the small amount of yeast used in baking or of its vitamin content as compared with that of the various milling products of the wheat. The significance of the figures given in Table II. is even more striking when we try to estimate the amount of the various kinds of bread necessary to furnish an adequate supply of vitamin B under conditions in which bread is the only source of supply of this vitamin. From the data given above it follows that the minimum amount of vitamin B necessary to enable a rat rapidly to resume growth and to regain a normal temperature on the basal ration is contained in 0·5 to 1 g. of wheat germ and in about 1 g. of fresh yeast. It may be added that this is by no means the optimum amount which may be a good deal higher. We may put the minimum amount, therefore, at 50 to 100 units. If bread is the only source of supply of this vitamin, then a rat in order to get this amount would have to consume daily (calculated as for dried bread):—

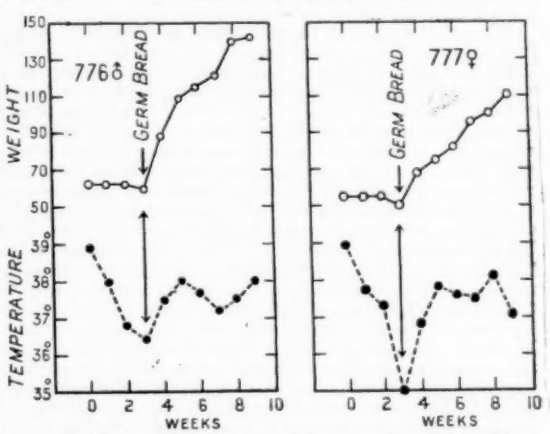
White bread	25 to 50 g. =	250–500 %	of basal ration.
Wholemeal bread ..	3 „ 6 g. =	30–60 %	
Hovis germ bread ..	2 „ 4 g. =	20–40	

Since a rat of 100 g. weight only consumes about 10 g. of dried food material of a properly compounded ration, it is obvious that on a diet of which white bread is the only source of vitamin B it cannot obtain a sufficient amount of vitamin B to maintain its health. This is confirmed when tested experimentally. Rats were kept on the basal ration free from vitamin B. The addition of 2 g. of air-dried Hovis germ bread or of 3·5 to 4 g. of wholemeal bread was sufficient to ensure complete recovery. The addition of 5 g. of air-dried white bread (50 per cent. of the diet) or the substitution of bread for casein (100 per cent. of the basal ration) was unable to effect recovery and the rats died. A large number of each experiment have been carried out. The results are consistent in showing that the vitamin B content of any particular kind of bread as determined directly by feeding experiments corresponds closely to that evaluated by the calculation given above. Therefore, if it is known what relative amounts of the different milling products any particular bread contains, and if these milling products have not been subjected to any process which destroys their vitamin B content, it is possible to evaluate the vitamin B content of the bread from the data given above.

It seemed of interest to compare the vitamin B content of various kinds of "brown bread" sold under different names. Their methods of manufacture were unknown to us. These "brown breads" were found to differ widely. Some of them were about as rich in vitamin B as wholemeal bread. One particular form of "brown" bread was found to be poor in vitamin B. We merely mention this in order to bring out the point that the "brownness" of bread is not a measure of its content in vitamin B.

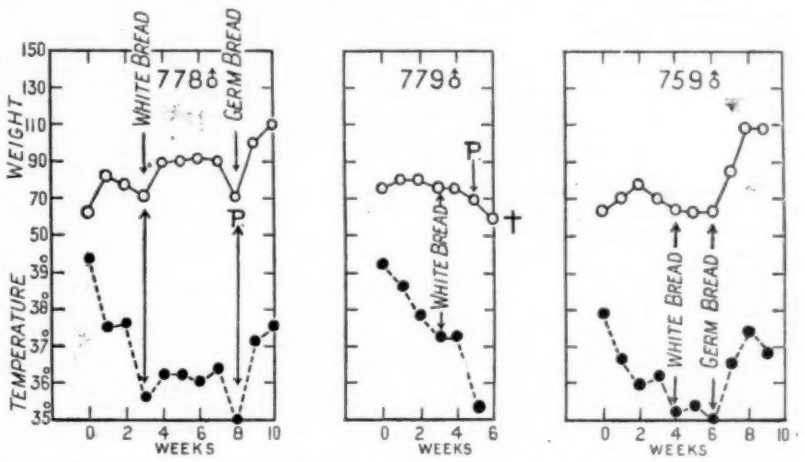
We have already mentioned that the introduction of roller mills probably brought about a material change in the dietetic habits of the population, by removing one of the main supplies of that vitamin from the diet. It seemed of importance to test this point by estimating the vitamin B content of bread made from stone-milled flour. Accordingly, flour stone-milled according to the old process was prepared for us in two different grades of fineness—namely, 56 per cent. extraction and 50 per cent. extraction. The 56 per cent. extracted stone-milled flour was found to be rich in vitamin B, 3 g. being sufficient to ensure recovery when added to a vitamin B free basal ration. The 50 per cent. extracted stone-milled flour was less abundant in vitamin B; 4 g. of this flour (40 per cent. of diet) led to only incomplete recovery. The minimal amount necessary to ensure complete recovery could not be determined as only a small amount of the flour was available. The experiments are sufficient to show that the introduction of roller mills did bring about an important dietetic change.

It is clear from what has been said that white bread is an article of diet practically free from vitamin B. The same conclusion is arrived at whether the vitamin content is determined directly by feeding experiments or whether it is calculated from the



The charts have been selected from a large number of experiments as illustrating the vitamin B content of white bread, germ bread, and of wholemeal biscuits (made without yeast). The experiment with biscuits is given as an illustration of the unimportance of yeast as a source of vitamin B in bread. The germ bread used was Hovis bread. The clear circles represent the weights of the animals, the dark circles the temperatures. It should be noted that the first temperature reading is almost always too high, because the rat reacts to the unaccustomed handling by a slightly raised temperature. In every case the animals were placed for three weeks (four weeks with rat No. 759) on the basal ration free from vitamin B, which produced the typical effects (cessation of growth, fall in weight and temperature). Then the various kinds of air-dried bread (or biscuits) were added to the diet so that the bread represented 33 per cent. of the whole diet. The charts show immediate complete recovery with germ bread (Nos. 776 and 777), a somewhat slower recovery with wholemeal biscuits (Nos. 774 and 775), a continued decline with white bread (Nos. 778, 779, 759). Two rats of this last group developed paralysis of the hind legs (P.). Of these, one (No. 779) died, the other (No. 778) recovered rapidly when germ bread was substituted for white bread. A third rat (No. 759) did not develop paralysis, but was so ill that it would have died in the next few days if white bread had not been replaced by germ bread, which led to a rapid recovery.

amount of yeast present in the bread and the vitamin content of the yeast. Reference has already been made to observations (Hartwell) which are supposed to show that white bread contains a considerable amount of this vitamin and to the explanation given that white owes this vitamin B content to the yeast added in the process of baking. It is obvious from considerations both of our own and of previous observations on the relative amount of vitamin B in yeast and in the different milling products of the wheat grain that this explanation must necessarily be erroneous. It is necessary, therefore, to consider the experimental evidence on which Hartwell's conclusions are based. The usual method of testing for the presence of vitamin B is to keep rats on a basal ration adequate in every other respect but known to be free from this vitamin, as evidenced by the well-known effects on growth and temperature, and to add the article of diet to be tested to this basal ration. This is the method adhered to in our experiments. Hartwell, however, kept the animals from the beginning of the experiment on a diet of white bread, butter (not butter-fat), a salt mixture, and water. On this diet the rats increased in weight and so far as the recorded evidence goes showed no obvious signs of vitamin B deficiency. The temperature of the animals was not taken, but it is stated that they were more susceptible to cold. This experimental arrangement is obviously faulty because it does not provide for any controls to show that vitamin B may not have been supplied by the only other article of this diet—namely, the butter. It has frequently been shown that butter may contain considerable amounts of vitamin B. Moreover, Hartwell carried out one series of experiments with bread made with baking powder, in which no yeast was added in the process of baking. Since, according to Hartwell's contention, the addition of yeast gives to white bread the relative high vitamin B content which she claims for it on the basis of her experiment, baking-powder bread should be very poor in this vitamin. But the rats kept on baking-powder bread and butter showed good growth which was only slightly less than that of rats kept on baker's bread, made with yeast, and butter. No explanation is given for this result. It is clear, therefore, from her own experiment, that in Hartwell's diet the main supply of vitamin B which enabled the rats to grow came from the butter and not from the various white breads tested by her. It is to be regretted that on the basis of these faulty experiments Prof. V. H. Mottram, in whose laboratory these experiments were carried out, should have published in popular writings the erroneous statement that white bread contains an abundant supply of vitamin B and is not greatly inferior in this respect to wholemeal bread or germ bread, and that as the result of this propaganda this error should have been widely accepted.



General Discussion.

The discussion on " white bread and brown bread " has suffered as much from the uncritical enthusiasm of the advocates of " brown bread " as from the faulty statements of the defenders of white bread. It has been suggested, for instance, that a lower grade of milling should be adopted. But what the miller has sundered the baker can put together again, so that using patent flour as a basis any desired admixture of the other vitamin B containing milling products of the wheat grain can be used for baking. It must also be considered that flour containing any part of the germ does not keep well for any length of time and cannot therefore be shipped, transported, or stored in bulk, so that it is not adapted for the supply of countries with dense populations. A high grade of milling is therefore an economic necessity. The high grade of milling has the further advantage that after separating the germ, methods of treating it can now be employed which without destroying its vitamin B content greatly prolong its ability to keep without deterioration. There is lastly the question of taste. Bread is not eaten as a medicine but as a regular article of diet, and many people prefer white bread to " brown bread " on the ground of taste. This may be partly due to the fact that it is more troublesome to make a good loaf from wholemeal bread than from white flour and partly to the presence of bran in wholemeal bread. On the other hand, there are also people who, on the ground of taste alone, prefer " brown bread " to " white bread."

The question of taste cannot be discussed on scientific grounds. But the nutritive value of different kinds of bread can be so discussed if the discussion is based on accurate data. The nutritive value of bread depends on a number of factors such as the content and the nature of the proteins, the content in carbohydrate, inorganic salts and water, its digestibility, and on its vitamin content. Before the discoveries of the vitamins all the other factors mentioned above had been repeatedly and carefully examined, and data concerning them can be found in many text-books on food or dietetics (see, for instance, R. Hutchison, Cohnheim). Generally speaking, the most important difference between white bread and wholemeal bread has in the past been attributed to the presence in the latter of the bran, because it affects the digestibility of bread. By the term digestibility is meant the extent to which the proteins and carbohydrates of bread are absorbed from the intestinal canal. There is a general agreement that with wholemeal bread, on account of the bran which it contains, the absorption of protein is less complete than with white bread. The absorption of bread such as Hovis bread, which is made from germ and white flour, and which does not contain any bran is nearly as complete as that of white bread (Goodfellow). While on these grounds the presence of bran in wholemeal bread has been looked upon as a disadvantage clinicians have recommended in the past wholemeal bread for its laxative effect. This they have ascribed to the presence of the indigestible material in wholemeal bread which was supposed to act as a mechanical stimulus to peristalsis and to the absence of which in white bread they attributed the constipating effect of the latter.

The discovery of the vitamins has added a new factor to the discussion on the question of the nutritive value of the bread, and it is this new factor around

which the recent controversy has centred. The recent discussion has suffered from an inaccuracy of the experimental data concerning the vitamin B content of the different kinds of bread and from a confusion of issues. Some authors have denied that white bread is deficient in vitamin B, others have asserted that the disadvantages of indigestible material in wholemeal bread (bran) counterweigh those resulting from a deficiency of vitamins in white bread. A third argument has been that the presence or absence of vitamin B is of little practical importance, since the amount of vitamin B required in a diet is small and is supplied by other constituents of an ordinary dietary. It will be well, therefore, to take these various arguments in turn.

The data given in our paper leave no doubt that white bread made from white flour and yeast is so deficient in vitamin B that it has ceased to be a supply of this vitamin in our dietary. This conclusion is based not only on our feeding experiments, but also on a quantitative consideration of the data recorded in the literature concerning the vitamin B content of yeast and the various milling products. Wholemeal bread is rich in vitamin B, and bread made of one part of wheat germ and three parts of white flour is even richer. Since this latter bread does not contain bran, it is clear that a high vitamin B content of bread is not necessarily dependent on the presence of this indigestible material. In this connexion it may also be pointed out that the constipating effect of white bread is probably due to the absence of vitamin B and not to the absence of indigestible material which is supposed to act as a mechanical stimulus. We have shown previously (Cramer 1923, 1924) that substances rich in vitamin B have a laxative effect, while in the absence of this vitamin there is constipation. This has been confirmed by Gross. It is also shown in an experiment on a dog recorded by Karr, in which the weight of the fæces excreted fell from 59 g. to 46 g. on a diet free from vitamin B and rose suddenly on the addition of this vitamin to 90 g.

The last question, whether the deficiency of white bread in vitamin B constitutes a serious dietetic error, requires a more detailed consideration. Our previous experiments, as well as those of McCarrison, have shown that the amount of vitamins required by an organism to maintain it in good health is much greater than that necessary to prevent or to cure the so-called specific deficiency diseases. Even a partial deficiency of vitamins in the diet or "vitamin underfeeding," as we have called it, if lasting for any length of time impairs health, and if it falls on children prevents perfect development. Quite recently this view has been endorsed by the observations of other workers (see, for instance, Rowlands and Plimmer). The idea which prevailed previously that the non-appearance of beri-beri in a population is a guarantee that the diet contains an adequate amount of vitamin B is, therefore, erroneous. Our present knowledge of the mode of action of the vitamins suggests that they have a specific stimulating effect on the functional activity of certain tissues. There is, in fact, a close analogy between this specific stimulating function of vitamins and the function of hormones. There is a similar analogy between the varying degrees in the impairment of health due to an inadequate supply of these two groups of agents.

Now cereals represent one of the main supplies of vitamin B in the human dietary, and before the introduction of the roller mills the stone-milled flour did represent an important source of supply of this vitamin. White bread has ceased to fulfil this part. On a varied diet which includes milk, butter, eggs, porridge, potatoes, and other vegetables, the absence of vitamin B from bread may not be a serious defect. But the people who can afford such a diet do not eat much bread anyhow. It is among the poorer classes, and especially the children of the poorer classes, where bread represents the bulk of the daily diet, and where butter is replaced by margarine that the absence of vitamin B from white bread has to be considered as a serious dietetic defect. Reports of medical officers of health show that many of these children live on a diet composed of white bread, margarine, jam, and fish with perhaps some potatoes. Such a diet is certainly deficient in both vitamin A and B and could be made adequate as regards the latter vitamin by the consumption of bread rich in vitamin B. At present these children are being supplied at welfare centres and schools with yeast preparations, a procedure which is not only economically wasteful but also absurd if it is considered that the amount of these yeast preparations that can be taken is relatively small on account of its taste, and that far larger amounts of vitamin B could be supplied if the children were given wholemeal bread or germ bread instead of white bread. One slice of germ bread weighing an ounce or two slices of wholemeal bread contain about as much vitamin as 5–6 g. of fresh yeast.

Similarly, in institutions, boarding-schools, &c., where the diet is likely to be monotonous, bread containing vitamin B should always be offered together with white bread. As a practical rule, it may be said that in those conditions when bread constitutes a large bulk of the diet, the exclusive use of white bread would make the dietary deficient in vitamin B, and the partial substitution of bread rich in vitamin B for white bread would make the diet adequate in its vitamin B content.

Summary.

1. In accordance with the observations of previous observers, it was found that wheat germ is very rich in vitamin B. It is at least equal in that respect to yeast.

2. The various milling products of the wheat grain contain vitamin B in the following proportions, taking the vitamin B content of yeast = 100 :—

Germ	100	Bran	33
Middlings	50	Patent flour	0

3. The vitamin B content of different kinds of bread depends upon the milling products used in the making of bread. The vitamin B content of the amount of yeast added in the baking of bread is too small to be responsible for a significant addition to the vitamin B content of bread. The vitamin B content of different kinds of bread, as calculated from the amounts and the vitamin B content of the various milling products and yeast used in the making of the breads, corresponds closely to their vitamin B content as determined experimentally. Thus white bread made with yeast is very poor in vitamin B. Wholemeal bread and the germ bread examined by us are very rich in vitamin B. The latter differs from wholemeal bread in being free from bran, so that, contrary to what has been stated, richness in vitamin B is not necessarily dependent upon the presence of indigestible material.

4. The significance of these findings in relation to dietetics is discussed. It is pointed out that the nutritive value of different kinds of bread, if treated as a practical problem of dietetics, must be considered in relation to the diet as a whole. Where the constituents of the diet other than bread are poor in vitamin B the nutritive value of white bread is definitely inferior to that of bread rich in vitamin B.

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IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

The Dentists Bill and "Treason."

THE Dentists Bill led to some warm debates last week in committee in Dail Eireann. The first tussle came over the proposal in the Bill which recites "treason" as one of the offences for which the name of a dentist may be erased from the Register. The deletion of the clause was urged by Dr. Ryan (Fianna Fail), who was supported by Mr. De Valera and other members of their party. It was urged that the definition of treason was to a great extent a party matter, and that a respectable man who incurred the displeasure of the party in power might find himself convicted of treason and permanently debarred from practice as a dentist. On the other hand, the Government stood firm by their clause and backed by the Labour Party and the Independent Members, they had a considerable majority. The Minister in charge of the Bill, Mr. McGilligan, usually very accurate, made a blunder in defending the clause. He asked: "Did the Deputy think for one moment that a man convicted of treason against the English State, and released after being sentenced to death, would be allowed to practise under the British Medical Register?" There is at least one case in which a man convicted of treason, sentenced to death, and released, has become a registered medical practitioner without let or hindrance. Moreover, a medical man found guilty of treason in Dublin in 1916 and sentenced to 20 years' imprisonment has continued to practise since his release some months later, and his name never was erased from the Medical Register. As a matter of fact the word "treason" does not occur in the Medical Acts, although, as Mr. McGilligan pointed out, the offence is no doubt adequately covered by the term "felony."

A discussion of more immediate interest to medical men was concerned with the proposal in the Bill to prohibit any dental work being done by medical practitioners except in urgent cases. The clause was attacked by Sir James Craig, Dr. T. Hennessy, and most of the medical deputies on both sides of the House. The impossibility of making the clause effective in country practice without grave hardship to the poor was stressed by several speakers, and ultimately the Minister agreed to the deletion of the clause. He added, however, that it might be necessary, at a later stage, to introduce another amendment to tighten up the section.

Abolition of Workhouses.

The recommendations of the Commission on Local Government in Northern Ireland, briefly summarised in THE LANCET of Nov. 12th (p. 1041) include the abolition of workhouses. There are at present 16 workhouses in Northern Ireland, most of them half empty or more than half empty. One of the most pleasing features of the evidence given before the Commission was that it showed the gradual disappearance of destitution from Northern Ireland. The existing workhouses could with great advantage, socially and economically, be replaced by a limited number of county homes (perhaps three in all for the area) where the conditions of life would be much more comfortable and home-like than is possible in the existing workhouses. Able-bodied persons admitted to county homes should be subject to strict discipline and employed in useful work in connexion with the home. The Commission recommends that all children of the destitute class should, as far as possible, be boarded out, and that all limitations to the boarding out of such children should be removed. It suggests a number of regulations to secure that this system shall be on sound lines and free from abuse. It is recommended that tramps and casuals requiring a night's lodging should be directed to the police barracks, and that the police, after satisfying themselves of the bona fides of the individual, should issue a recommendation to the relieving officer, who should then deal with the case.

Treatment of Tuberculosis.

Another section of the report deals at length with the question of tuberculosis. The Commission considered that the present methods of treatment are too costly and on the whole ineffective as regards stamping out of the disease. It held that sanatorium treatment is only suitable for early cases where there is reasonable hope of recovery and that all advanced cases should be dealt with in other institutions. Two or three sanatoriums, it was thought, would be sufficient for Northern Ireland, and that provision for advanced cases might be made in the district hospitals. The view was expressed that advanced cases are the most infectious and are unsuitable for domiciliary treatment. The Commission recognised the great value of sanatoriums as educative agencies for patients and for the public generally. The lack of institutional treatment for non-pulmonary forms of tuberculosis was emphasised, the only institution for this purpose in the area being the Graymount Hospital for Children. The adoption of the Tuberculosis Acts is at present permissive, and the Commission held that they should be made obligatory on all county health committees.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

Treatment of Cripples.

SOME time ago a committee was formed in Edinburgh to consider the establishment of a special hospital for cripples. The earliest conference decided that a central orthopædic hospital should be built on the outskirts of Edinburgh; that major clinics should be formed in the more populous centres of the counties; that minor clinics should be formed in the remoter parts; and that coöperation between existing hospitals and the new central orthopædic hospital was essential. Steps were taken to collect funds, the sum aimed at being £75,000. Everybody in the movement agrees that a special hospital is the only means of dealing efficiently with the complicated group of problems covered by the term "cripple." Many small organisations have been working for years and have done good work, but the range of orthopædics has rapidly developed. The education authorities have been obliged to make certain provision in schools for physical defectives, but the deformities of growth are themselves a host, and the value of electricity, massage, ultra-violet light, hydrotherapeutics, remedial gymnastics, and their combinations is only beginning to be understood. The work is far beyond what any "acute" hospital can undertake, for time is the essence of the treatment. The projected hospital will certainly not want for cases. It is understood that the Scottish Board of Health are ready to consider this new development as a part of the child welfare and school schemes, and to judge by the favourable local reception, the committee should soon raise enough to justify them in proceeding with site and plans.

Administrative Lacunæ.

At a meeting of the Medico-Chirurgical Society of Edinburgh, held on Nov. 2nd, when the new President,

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Dr. Logan Turner, took the chair, a paper on the scheme was read by Prof. John Fraser. It was agreed, he said, that the term "cripple" should not include the blind, the deaf mute, or the mentally defective, but should comprise all children below the age of 16 whose affliction was capable of remedy. It was difficult to say how many cripples of this class there were in South-East Scotland, but the Scottish Board of Health had estimated that there were 753 in the five groups: severe rickets, tuberculous disease of bones and joints, poliomyelitis, and congenital and other crippling deformities. Legislative machinery already existed for the treatment of cripples, whatever their malady, up to the age of 5, but later only such conditions as tuberculosis and infantile paralysis were provided for. Child welfare centres had to refer cases to special or general hospitals, and something under a hundred beds were available for their accommodation. This was quite inadequate. The type of institution required must be built to provide sun, wind, and fresh air. Further treatment might be for a long period combined with education of the patient, and later continued at home. Cripple homes were not a solution as no treatment was provided. The present scheme aimed at seeking the cripple in the earliest state and at following him until he was restored to well-being and efficiency, so far as was humanly possible. Minor clinics would be on out-patient lines and would be situated in small towns or villages and attended by a nurse who could apply appropriate massage and splinting under the supervision of local practitioners. These centres would be visited regularly by a central orthopædist. Record cards would be made of all cases; these would be available to the family doctor and health authorities. The major clinics were intended to be part of the general hospitals of towns and more specialised treatment could be carried out in them. Central orthopædists would visit and collaborate with the hospital staffs. The new Edinburgh hospital, said Prof. Fraser, would be built on the outskirts of the city and would take 75 patients. Among the speakers who discussed the paper was Miss Gertrude Herzfeld, who, speaking as a surgeon of a children's hospital, said that the scheme would be useful for all after-treatment, but thought that all the cases should first come, as they do at present, to the children's hospital, where initial treatment should be carried out.

Hospital Coördination.

The relative position of the voluntary and other hospitals was referred to recently by Sir John Gilmour, Secretary of State for Scotland, in a speech at Falkirk. He laid down the fundamental proposition that any scheme which did not utilise to the full the available resources of existing hospitals required overhauling, and commended the kind of solution to this difficulty which was being observed in the Aberdeen area, where the Poor-law authority had handed over its hospital to be administered by the city of Aberdeen and where there was a complete and cordial coöperation between the voluntary hospitals in the training of nurses and University students.

Of the £400,000 aimed at for the new Royal Infirmary, Aberdeen, a sum approaching £260,000 has already been subscribed.

NOTES FROM INDIA.

(BY OUR OWN CORRESPONDENT.)

Tropical Medicine Congress in Calcutta.

As your readers will be aware by this time the Government of India has invited the Far Eastern Association of Tropical Medicine to hold its Seventh Congress in Calcutta next month. All Calcutta is athrob with excitement and pleasure at the prospect of welcoming so many distinguished visitors. Many scientific sections and demonstrations have been arranged, all devised to stimulate us to deeper investigation of hitherto unexplored regions of the principles and practice of medicine in the tropics. Short tours have been planned to places of interest in Calcutta and throughout India, and no effort is being spared by the Calcutta Local Committee to afford every Congress delegate a pleasant memory of his visit to India.

Public Health Policy.

One may hope that the Congress will do something to arouse the national consciousness of India towards a considered health policy. The Reforms Act of 1919 relegated public health to the care of provincial governments. In 1926 the Government of India held that the general direction of a policy of public health must remain in its own hands, on the grounds that considerations of public health should permeate all fundamental legislation and receive a definite place in the administration. At present, instead of a clear pronouncement from a central responsible government, we have merely a number of provincial authorities in charge of the health of India, with the result that the public health executive is at the mercy of local politics. Until the political horizon clears there will be little improvement in dealing with the public health problem.

The Calcutta Medical Degree.

The same policy of relegating to provincial control the details of medical education—the standard of education being still presumably with the central government—led in 1925 to misunderstandings with regard to the recognition of the Calcutta M.B. examination by the General Medical Council. It is greatly to the honour of the Council, guided by the prudent and temperate report of Sir Norman Walker after his inspection of the affiliated colleges and the examinations, that they made the first move of rapprochement and have expressed a willingness to consider any application for renewal of recognition from Calcutta University, provided that the new regulations be immediately introduced in the early years of the curriculum. The University authorities having agreed to this, it is hoped that Calcutta graduates will be enabled to prosecute further studies in England and to obtain higher degrees without having to appear before any of the home examining boards. The Medical College of Calcutta especially felt this loss of recognition keenly, founded as it was in 1825, 20 years before any other medical school or college in which instruction in the preliminary medical sciences was provided side by side with clinical teaching; and its examinations at the conclusion of the curriculum included the three branches of medicine, surgery, and midwifery. What a striking testimony to the foresight and sagacity of the medical officers of the Honourable East India Company.

Pure Food and Drugs.

India stands in great need of legislation for ensuring the purity of its food and drugs. That the cult of quackery prevails in every branch of medical and surgical science is readily seen from the multitude of advertisements in every vernacular paper. Manufacturers and vendors of counterfeit drugs and chemicals are legion. At present they can only be prosecuted in a civil court at great expense and loss of time. To render such transgressions criminal will require a Food and Drugs Act. But under the new regime this is a matter for each individual province, and it is to be feared that there will be considerable delay before India falls into line with the usages of other countries under the League of Nations in this respect.

Scientific or Empirical Treatment?

A storm has arisen among the indigenous medical practitioners over the statement made by Mr. G. Pilcher, M.P. for Falmouth, in which he is reported to have said that "at the clamour of the Indian politicians, the Government of India has been forced to give State aid to the preposterous Ayurvedic and Yunani systems of medicine prevalent throughout the country." The practitioners of the former system claim that a modification of Ayurvedic medicine is more suitable to the needs of India than the imported

foreign scientific system. It is true that religion and antiquity venerate Ayurveda, but it is clear that only so long as scientific education in India remains at its present low level can a purely empirical system of treatment prevail and then only among the less enlightened.

Beri-beri and Epidemic Dropsy.

The question of the ætiology of beri-beri has come again to the fore by reason of the recrudescence of the disease in Madras and Calcutta and in many rural areas. Urgent requests for a committee of investigation have now been made to local governments. The disease known as epidemic dropsy which, having died out in 1890, again appeared in 1907 and is now epidemic each year in one or other district in Bengal, has still to be clearly defined in its relation to beri-beri. Well-organised investigation might definitely establish the ætiology of both.

Public Health Services.

MENTAL HOSPITAL REPORTS.

Devon Mental Hospital at Exminster, at the end of 1926, had 1227 patients on its registers. The general recovery-rate was 35·53 per cent., but the figure for the private patients works out at 69·8 per cent. for a total of 294 admissions. The death-rate for this year was 9·17 per cent. The increase on last year's low figure of 6·6 per cent. is chiefly due to 19 cases of pneumonia, for some of which the coal restrictions were undoubtedly responsible. No deaths occurred from typhoid, and only two from enteritis. Autopsy was performed on 69 per cent. of the patients who died, an absolute increase of 26 operations. No bedsores at all were reported throughout the year. The incidence of tuberculosis is still somewhat high, 28 patients being isolated. The hospital has always been troubled with sporadic typhoid, and in the autumn of 1924 preventive inoculations were introduced, since when only one patient has been suspected of the disease. Even in this case all cultures were negative. Widal tests have also shown the efficacy of the inoculations. The drainage system has been tested and will doubtless be set in order at once. The medical superintendent speaks with caution about the results of malaria treatment in 13 cases of general paralysis. Three died of intercurrent affections, one has been discharged and remains well, two are considerably improved, and the remaining seven slightly improved. The figures contain a promise which is confirmed by the results obtained by others, that this method gives some beneficial results in nearly all cases. The consulting surgeon made 60 examinations and performed 10 major operations, most of which resulted in great mental improvement; cholecystectomy and the relief of a strangulated hernia respectively enabled two patients to take their discharge. The radiologist examined 60 patients, and his work has been much facilitated by the provision of a 10 K.V.A. high-tension transformer. An ophthalmic consultant attends monthly and examined 61 cases during 1926, finding a considerable amount of chronic disease dating from before admission. The dental record includes 425 examinations, 117 extractions, and 33 dressings and fillings. The aggregate number of patients and staff which has received benefit from the consultants' services is 300. A fortnightly out-patient clinic is maintained in Exeter, and the superintendent pleads for facilities for bed-treatment and psychotherapy. 124 patients have been on parole daily within the walls and 45 have been given extended privileges; only four cases of abuse have occurred. There are now 11 open wards, allowing free entrance and exit to 270 patients, and open single rooms are to be provided and allotted as a privilege. The list of articles manufactured by patients is impressive. All the stationery, including the annual report, is printed in the institution, and patients are employed in book-binding, weaving, mat-making, net-making, upholstering, shoe-making, sewing, and knitting. Nearly all earthenware utensils have now been replaced by aluminium. The patients' play is as varied and as well organised as their work. Two additional loud-speakers have been purchased and programmes can be reproduced, by an ingenious use of the house-telephone system, at any point or points where they are required. Among new improvements are a verandah to the female receiving ward, a dwelling-house which was purchased as a home for private patients and which now accommodates 30 nurses, and an ultra-violet light apparatus. Clinical rooms are now attached to all but three of the wards and a sheltered gallery has been built opening out of the men's infirmary. The laboratory staff made 1440 investigations. Thirteen nurses passed the final and 13 the preliminary M.P.A. examinations. Female nurses have now been posted in the isolation hospital and male infirmary, and are proving a success. The report of the Visiting Commissioners indicates that the diet might be revised with advantage, and points out the need, in conjunction with the operating theatre, of sterilising, waiting and surgeons' rooms. The annual report is illustrated with two excellent photographs and does credit to the hospital printers.

Dorset Mental Hospital.—On the last day of December, 1926, 902 patients remained—an increase of 35 for the year. Of the direct admissions 31·61 per cent. were discharged fully recovered, and the death-rate has fallen to 5 per cent. from 5·5 per cent. last year and 8·2 in 1923. Post-mortem examinations were held in 52 per cent. of the deaths. For the first time in at least nine years no dysentery or typhoid was experienced, but five carriers are still in the hospital. There was no other epidemic sickness. Ten patients are under treatment for pulmonary tuberculosis. The consulting dental surgeon, who visits fortnightly, examined 276 patients. Additions to the hospital include a solarium in course of construction and a chlorinating plant; an out-patient clinic is held weekly in Dorchester. Ten patients were sent out on trial; 62 had extended parole and 27 restricted parole. The vacancies on the male side were 99, but there was one female inmate over the establishment. An operating room is nearly completed and a dental room is in use. The male admission ward has been rearranged and now has its own verandah and is to have its own continuous bath. The total number of routine examinations performed in the laboratory was 536, and 216 tests were undertaken in the search for typhoid carriers. The Boltz test is carried out on all cerebro-spinal fluids and is invariably negative in psychoses and positive in general paralysis. Tryparsamide has been used in the treatment of five general paralytics; one was discharged recovered, two were greatly improved, and two advanced cases failed to benefit. The improvement showed itself chiefly in the gait, speech, and mental condition. A research into the records of male patients for the past 40 years established that extraverts develop syntonic and introverts schizoid types of psychoses. Fifteen male and 14 female nurses are certificated or registered; ten nurses passed the preliminary and 13 the final M.P.A. examination during the year. The Commissioners recognise the need for an admission hospital, without which they say that no mental institution can be considered to be equipped in accordance with modern ideas.

Kent County Mental Hospital at Barming Heath, Maidstone, showed a total of 1855 residents at the end of 1926, as against 1793 at the beginning. There are vacancies for 19 males, but the female population is 58 in excess. The death-rate, 5·1 per cent., is the lowest yet recorded, and autopsy was performed on 95·8 per cent. of the cases. The recovery-rate was 34·4 per cent., somewhat below the average owing to the low rate of 22·9 per cent. on the male side; no zymotic disease occurred. Malarial treatment for general paralysis is to be resumed and a solarium has been built for recent male cases. Sixty-seven patients had parole outside the walls and 140 inside; 65 were allowed out on trial and 24 of these received money

allowances. Many wards have open doors. 67 per cent. of patients are now occupied, and the occupation officer has taken over the direction of the tailoring and boot-making shops. An occupational treatment room has been started for noisy patients. The Visiting Commissioners praised the high standard maintained by the staff and the well-organised system of training that exists here. Out of 178 nurses 74 are certificated or registered, and 35 have passed the preliminary examination. The Commissioners especially remarked on the quietness of the wards at night.

Chartham Down, near Canterbury, the other Kent hospital, houses 1228 patients, 46 more than last year. The superintendent and the Commissioners regret the influx of young mental defectives, a trouble not confined to this institution. The death-rate was 8 per cent. and the recovery-rate 32 per cent.; 67 per cent. of the deaths were verified by autopsy. The general health was satisfactory, as only slight influenza and no dysentery were reported. The disease incidence appeared high on account of the admission of ten persons with active tuberculosis. An X ray outfit is being installed, and the whole building is now lighted by its own electrical plant. Results of the Starke method in general paralysis, and of luminal in epilepsy, have been favourable. Parole is allowed to 46 patients outside the estate and 86 within; some of the wards are "open door" and some carry the privilege of sitting up after the usual retiring hour. The hot-water supply has been improved and plenty of hot water is now available, but the ward heating remains erratic and extravagant. The sanatorium has been turned into quarters for 30 nurses. Fifty-two out of the 146 nurses are registered or have certificates.

Brighton County Borough Mental Hospital at Hayward's Heath shows an increase of six in its population, the total at the end of 1926 being 834. Except for 16 cases of chronic tuberculosis, three exanthemata, and a few minor accidents, the general health has been excellent. The death-rate was 7·5 per cent. with post-mortem examination in 76 per cent. of cases, and the recovery-rate was as high as 48·9 per cent. Vaccine treatment has been tried and gave good results in one case of acute mania with hallucinations, who was removed somewhat prematurely after nine weeks but has remained well. Of five general paralytics sent elsewhere for malarial treatment one has returned much improved, three are reported as improving, and one is unchanged. The dental surgeon examined 570 patients, and an operating theatre and pathological laboratory are being constructed. The weekly clinic in Brighton treated 99 patients. Only 16 per cent. of the patients discharged were sent out on a previous trial, and the Commissioner urges in his report an extension both of this measure and of the granting of money allowances, which were given only in four cases. Parole is given to 80 inmates, of whom 33 are allowed outside the grounds, and one ward on each side has open doors. Additions to the building include a clinical room, a sewing room, and a waiting-room, but it appears that verandahs are still badly needed. Week-end leave was granted on 36 occasions and absence for the day with friends on 55. Patients attend the pictures locally and in Brighton, and local cricket and football matches and fêtes. The dietary has been improved in quality and variety. 57 per cent. of the male and 30 per cent. of the female nurses now hold certificates.

West Sussex County Mental Hospital, Chichester.—Here 779 patients were under treatment at the end of 1926, 31 more than at the end of 1925. The death-rate was low, 5·15 per cent., and the recovery-rate 36·15 per cent. An influenza epidemic broke out early in 1927, but except for one case of paratyphoid and one of chicken-pox the hospital was free from infectious disease in 1926. A dental surgeon visits fortnightly, and three other consultants are retained. Forty-six patients were allowed out on trial during last year; 17 were given outside and 55 inside parole. The new water-softening plant should make for comfort and economy. Nine nurses passed the preliminary and seven the final M.P.A. examination, while two passed the G.N.C. preliminary and one the final. The committee recognise the imminent necessity of increasing the accommodation for female patients.

Hertfordshire County Mental Hospital at Hill End, St. Albans, now shelters 952 patients, 48 more than last year's population. The recovery-rate was 25·3 per cent. and the death-rate was 5·48 per cent., as against 6·52 per cent. in 1925. Autopsies were held in 42 out of 51 deaths. Thirteen cases of intestinal disease and 11 of tuberculosis were notified, together with one of diphtheria and two of erysipelas; there was also an outbreak of influenza. The dentist treated 186 patients, and the surgeon performed several major operations. The system of parole is being extended, and one ward on the male side has open doors. Nine nurses passed the preliminary M.P.A. test and two gained the certificate, bringing the numbers so qualified up to 35 and 38 respectively. The Commissioners, in their report made in July, commented on the overcrowding on the female side and on the poor dietary.

City of Birmingham Mental Hospital, Winson Green.—The numbers at the end of 1926 were 756, an increase of 13 during the year and an excess of 32 on the authorised accommodation. 355 Birmingham patients are boarded out with other authorities, and fresh accommodation is urgently needed. The death-rate, 7·2 per cent., was the lowest in the history of the hospital since 1850, and post-mortem examinations were made in 65 per cent. of the deaths; the recovery-rate was 30·7 per cent. of the direct admissions, or, including "relieved" cases, 46·5 per cent. Fifty-five out of the 70 patients discharged as recovered, and 15 of those discharged as relieved, were allowed out on a month's trial first and maintenance or help was given to 40. Nine cases of colitis with two deaths occurred in the autumn and two cases of pneumonia were notified; seven patients suffered from pulmonary tuberculosis, of whom four died. Otherwise the general health was good. Recent admissions are inspected by the visiting dentist, the rhinologist, and on the female side by the gynæcologist for foci of sepsis, and the results have been very hopeful. Of four cases of general paralysis treated with induced malaria one recovered enough to return to work, one was improved, and two showed no change. In addition to the services of the visiting staff the hospital possesses a special treatment block with operation, anæsthetic, sterilising, electrotherapy, hydrotherapy, and surgeons' and patients' rooms with sanitary accommodation. Parole is being given to more patients than before, and has only been abused twice during the year. Selected male patients were taken to the canal for fishing, and female patients for outings in the neighbouring hills. 63 per cent. of the inmates were usefully employed, the men at their trades or in the gardens and the women on the work of the institution. The clinical rooms have been refitted and modernised.

The sister establishment at *Rubery Hill and Hollymoor* housed 1459 patients, 7 more than in 1925, and boarded out 320 under contract; this arrangement secured 42 vacancies, 18 more than were ever filled during the year. In spite of the bad health of most of the new admissions the death-rate was only 5·67 per cent., on 52·4 per cent. of which autopsy was performed. The recovery-rate was 40·1 per cent. of the direct admissions, with 13·4 per cent. more discharged relieved. Infective disease was slight. Six patients were being treated at the end of the year for tuberculosis, two nurses caught scarlatina from outside, and two cases arose of erysipelatoid infection from deeper tissues. There was no intestinal disease, and the average health was good. Large quantities of typhoid vaccine have been used for non-specific protein therapy, and this should increase the general immunity. General paralysis has been intensively studied, and pyrexial methods, including malaria and protein therapy and combined with removal of septic foci and specific treatment, have given varying but hopeful results. A bulwark of treatment is the concerted attack on focal sepsis in every patient by

the team of visiting surgical specialists. A mercury-vapour lamp has been added to the special treatment block, which includes theatre, electro- and hydro-therapy room, dark room, and rooms for surgeons and patients. 391 male and 435 female patients are usefully employed. Parole is granted on and off the estate, and many improving patients are given week-ends with their friends by way of preparation for discharge. The cinematograph, films for which are supplied by a private donor, is much appreciated. 107 nurses hold the M.P.A. certificate, 26 of whom gained it in 1926. Forty-two passed the preliminary examination during that year. The committee now regard their hospitals at Winson Green and Rubery Hill, with the annexe at Hollymoor, as one hospital under the control of Dr. T. C. Graves, with the title of chief medical officer. The divisions will each be in charge of a medical superintendent.

Stafford Mental Hospital showed an increase of 35 patients, from 961 to 996, during last year, and is seriously overcrowded on the male side. Like all other superintendents, Dr. B. H. Shaw pleads for the proper staffing of vacant Poor-law accommodation, and the disposal of mental defectives in special institutions. The death-rate was 7·42 per cent., and the recovery-rate 28·74 per cent. for men and 21·74 per cent. for women. There has been no zymotic disease for two years. A dentist visits fortnightly and an ultra-violet apparatus has been installed. Figures for the last 100 cases discharged recovered showed that the month's provisional treatment suggested by the Royal Commission would have been quite inadequate for 98, but that 58 need never have been certified if they could have had six months' voluntary treatment. The superintendent deprecates the scheme of sending early patients to a receiving house from which they must soon be moved, and points out the shortcomings of general hospitals in the treatment of mental disease; he advocates an extension of the voluntary system to public institutions. The committee recognise the urgent necessity for a separate admission hospital. A commodious verandah annexe is being built for male tuberculous patients. In all there are 17 tuberculous patients, for whom there is as yet no special provision. Except for the isolation hospital and a villa the whole institution now has electric light. In addition to its ordinary work the pathological department is investigating the diagnostic possibilities of cobra venom, the effect of ultra-violet rays, and certain symptoms referable to the basal ganglia occurring in dementia præcox and encephalitis lethargica. No women nurses are employed on the male side. Sixty-one of the staff are registered or certificated.

The population of *Burntwood Mental Hospital*, Staffordshire, was 936 on Dec. 31st, 1926, an increase of 22; death-rate for the year was 7·85 per cent. and recovery-rate 25·94 per cent. Eight deaths occurred during an epidemic of dysentery which affected 22 patients on the male side. Two cases of general paralysis were treated with malaria and both were discharged; one is known to have been at work for six months. A dentist visits regularly. Twenty-eight patients, or one-third of the number discharged, were first sent out on trial, 16 of these receiving an allowance. The introduction of a coke-oven, a Hobart mixer, and a potato and fish frier into the kitchen has considerably improved the dietary, but the Commissioners would have liked to see more interest taken in recreation. More nurses are sitting for their certificates, and the number certified or registered is now 41. Sixteen have passed their preliminary tests. The committee, foreseeing fresh demands on their accommodation, are pressing for the addition of an admission hospital and convalescent villa. At present new cases are admitted into the sick wards, where they sometimes come in contact with troublesome patients.

Cheddleton, the third of the Staffordshire county mental hospitals, had 1122 patients in its wards at the end of last year; this is one less than the year before. The utmost capacity of the building, estimated on measurement, is 1127, and overcrowding is acute, in spite of boarding-out. The admissions were 290, of whom only 76 could be considered recoverable, and this fact is considered by the medical superintendent a weighty argument against building an admission hospital of 50 beds. He advocates an "acute" hospital of 150 beds, with the special treatment block attached; no recoverable case need then go to the main block nor irrecoverable to the hospital, and no resentment would be incurred among relatives. The death-rate, 6·96 per cent., included 7 deaths from dysentery, 50 cases of which occurred throughout the year, entailing much laboratory work and handicapping research; 15 of these were children. Fifteen of the 19 carriers were children, many of them from guardians' institutions, and these were fairly certainly responsible for the size of the epidemic. None of them died. No advance in treatment, remarks the superintendent, has been made beyond magnesium sulphate; when it fails nothing will cure, probably because of secondary infection. The recovery-rate, calculated on the total admissions, was 23·1 per cent. Almost 40 per cent. of the discharges were made under Section 79, but 17 patients only were allowed out on trial, of whom nine received money grants. This hospital accommodates 90 mentally defective children in three wards, and more room is badly needed. The dental surgeon now visits twice a week. Ultra-violet radiation is being introduced and may reduce the present high incidence of tuberculosis; general paralysis is treated with induced malaria. Although no special occupation officer is employed, no less than 40 per cent. of the male patients are employed on the farm and 26 per cent. of women in the laundry. 32 per cent. are taken for walks beyond the estate, 33 per cent. attend the weekly entertainments, and 40 per cent. go to church. In spite of the poor soil the farm is worked energetically, and the superintendent's report contains much technical matter and a scheme for scientific farming in the future. Although qualified nurses are less difficult to find than they were, shortage of accommodation is still a handicap. Recent improvements include a supplemental water-supply, a cinema, and a class-room in the children's ward. Cheddleton possesses one of the best and largest bands of the mental hospitals of the country, trained by the superintendent.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 5TH, 1927.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 219 (last week 199); scarlet fever, 2341; diphtheria, 1482; enteric fever, 89; pneumonia, 1098; puerperal fever, 39; puerperal pyrexia, 94; cerebro-spinal fever, 10; acute poliomyelitis, 29; acute polio-encephalitis, 1; encephalitis lethargica, 26; continued fever, 1; dysentery, 10; ophthalmia neonatorum, 91. There was no case of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 5 (2) from enteric fever, 19 (2) from measles, 8 (2) from scarlet fever, 11 (2) from whooping-cough, 34 (9) from diphtheria, 64 (13) from diarrhœa and enteritis under two years, and 86 (21) from influenza. The figures in parentheses are those for London itself. The number of stillbirths registered during the week was 210 in the great towns, including 32 in London.

SOUTH LONDON HOSPITAL FOR WOMEN.—This hospital, on Clapham Common, is in urgent need of enlargement. Attendances in the out-patients' department average 36,000 annually, and the waiting list never falls below 500. Upon a 2-acre space at the rear of the buildings it is proposed to build a new out-patients' department, to increase the accommodation to 200 beds, and to provide better quarters for the nursing staff. The scheme will cost £180,000, £65,000 of which is required for the out-patients' department, towards which the King's Fund has promised £3250 conditionally upon this part of the undertaking being opened free of debt.

Correspondence.

"Audi alteram partem."

MEDICAL PRIVILEGE.

To the Editor of THE LANCET.

SIR,—Your leading article upon the effects of the McCardie judgment in July last gave weighty expression to the feelings of consternation amongst medical men at the prospect of being compelled to betray the solemn trust of their patients at the order of a judge. Since resumption of Parliament I have had the opportunity of conversation with some leading counsel in the House of Commons, and I have received from them very considerable encouragement for the suggestion that I should ask, under the 10-minutes rule, leave to introduce a Bill securing, as the *minimum* concession, privilege from disclosure for communications made by patients to medical practitioners in pursuance of Article II. (2) of the Public Health (Venereal Diseases) Regulations, 1916. I have obtained leave for a motion, which is now upon the Order Paper for Tuesday, Nov. 22nd, to introduce a Bill, as follows: "Medical Practitioners' Communications Privilege,—Bill to provide that certain communications between medical practitioners and their patients shall be privileged from disclosure in evidence," and I am promised the support of a number of very distinguished lawyers in the House for a Bill securing privilege restricted to the special case of venereal diseases. I should, of course, have preferred unrestricted privilege, and a clause which I had proposed to incorporate in my Bill ran as follows: "Confidential communications passing between a medical practitioner and his patient shall be privileged from disclosure where made for the purpose of obtaining or giving medical assistance in some illness from which the patient is suffering." I am, however, being earnestly dissuaded from attempting this wider purpose by distinguished lawyers in the House who warn me quite frankly that there would probably be general opposition from lawyers to the enlargement of medical privilege to the same degree as the lawyers now enjoy. If your readers can in any way assist, by representations to their Members of Parliament, the acceptance of my motion on Tuesday, the 22nd, the crying scandal of the present position—namely, the conflict between law and regulations in relation to the administration of clinics for venereal diseases might perhaps be removed.—I am, Sir, yours faithfully,

E. GRAHAM LITTLE.

House of Commons, Nov. 14th, 1927.

FINANCIAL HELP FOR DENTAL STUDENTS.

To the Editor of THE LANCET.

SIR,—From time to time, in my capacity as Registrar of the General Medical Council, I am asked whether I know of any fund from which the sons or dependents of medical men can receive financial assistance to enter the medical profession, and my reply has to be that some of the medical schools have scholarships for this purpose, but, apart from this, I do not know of any fund from which they can be assisted.

With regard to dentistry, however, the position is different. Unless the entry of students to the dental profession is increased it is not improbable that in process of time there may be a shortage of dentists to attend to the needs of the public. In suitable cases, therefore, in which the requirements of the General Medical Council for the registration of students have been satisfied, the Board is prepared to give financial assistance, by means of bursaries, to pay the cost of fees and instruments, and in some cases maintenance is given in addition. So far as I know there is scarcely any other great profession for the entrance of which such facilities are provided. As it is possible that medical practitioners may know of cases in which young men, in every way suitable for entering the profession of dentistry, are debarred from so doing by lack of means, it is desirable that the assistance offered by the Dental Board should be made known.

Further information will gladly be sent on application to this office. All letters should be addressed to the Registrar of the Dental Board.

I am, Sir, yours faithfully,

NORMAN C. KING.

44, Hallam-street, London, W., Nov. 10th, 1927.

THE AUSCULTATORY "SILENT GAP."

To the Editor of THE LANCET.

SIR,—I agree with what Dr. Gibson says in his interesting article on the above subject about the little attention paid in this country to the work of French observers. But from the context I fail to gather that Dr. Gibson, though quoting Barbier's "La Méthode Auscultatoire," has noticed his explanation of how the arterial sounds are produced. Testing his explanation with the abundant clinical material afforded by the Heart Clinic of the Ministry of Pensions I have found it very illuminating.

In listening to the sounds Barbier recommends the observer to concentrate his attention on the variations in loudness which follow a regular sequence from the systolic to below the diastolic levels. The variations in tone have led to the formation by observers of zones which are a needless complexity. The variations in tone are hardly ever alike, but the variation in loudness follow the same course in nearly all cases. The first sound heard as the pressure is released is a dull thud or hiss which denotes the systolic level. This, increasing rapidly in loudness, reaches its maximum about 5 mm. lower and then gradually becomes fainter, but about 15 mm. lower it will be noticed to be increasing in loudness, but more gradually, so that it will be about 30 mm. lower that the arterial sound is louder than in any other part of the curve. Then it suddenly becomes quite faint, thus determining the diastolic level.

Barbier holds that there are two factors at work—vibrations in the blood stream and vibrations in the arterial wall. The sounds in the first part of the curve are mostly blood stream sounds which diminish as the lumen of the compressed artery is allowed to open. The sounds in the second half partake more of a rapping than hissing character and are due to vibration of the arterial wall which increases as the pressure is released. The part of the curve where there is least sound is where the blood stream sounds are dying away and the wall sounds are just beginning, and it is here that the silent gap occurs when both sound-producing factors are weak.

What has induced me to pin my faith to Barbier in my little work on the subject, where I explain the matter more fully, is that he gives various ways for testing the correctness of his theory, which I have found convincing.—I am, Sir, yours faithfully,

Manchester, Nov. 11th, 1927. FRANCIS HEATHERLEY.

ORGANIC HYPNOTICS.

To the Editor of THE LANCET.

SIR,—We cannot hold you responsible for the opinions expressed by the President of the Medico-Legal Society in his Presidential address on Oct. 27th, but, as you publish the address in extenso under the heading of Recent Advances in Toxicology and Forensic Medicine in your issue of Nov. 5th (pp.970–971) we would point out that we, the inventors, manufacturers, and distributors of the Allonal brand of Allyl-isopropyl-barbiturate of phenyl-dimethyl-dimethylamino-pyrazolon, commonly called Allonal tablets, cannot but regard the inclusion of our preparation in the paragraph headed New Drugs as casting a slur upon, if not actually libelling our

product, ourselves, and also your journal, since you accept and display advertisements in which, according to the author of the paragraph named, we make false statements and claims, which "should not be accepted at their face value."

For our preparation we would say that: It is the product of years of patient research by chemists, pharmacologists, and toxicologists of hitherto undoubted bona fides and repute; it is manufactured and sold as a Roche product, which is accepted throughout the world as a synonym for pharmaceutical preparations of the highest class; on entry into this country it has to bear its full share of the key industries duty; it is advertised and offered only to the medical profession with full disclosure as to its composition and action, and in advertisements and literature regarding it no claim nor statement is made which cannot be substantiated and corroborated by the experiences and opinions of the most eminent medical men in our own and most other countries. Allonal tablets have, during the four years they have been on the British market, gained hundreds of enthusiastic users in the medical profession. A member of a partnership of three doctors who, in three and three-quarter years, have bought and used 29,000 Allonal tablets in a great industrial area of this country, said only yesterday that his experience led him to consider the statements of the author of the article under review worse than unfair, and that he himself would not willingly be without Allonal, which had enabled him to almost give up the use of morphine.

We are therefore quite content to allow Allonal to live on its own merits and we make no comparisons between our own preparation and those named in Sir William Willcox's sweeping generalisations and condemnations, which are all the more to be deplored since they were uttered by one to whom so many look for facts and guidance.

We are, Sir, yours faithfully,

THE HOFFMANN-LA ROCHE CHEMICAL WORKS, LTD.

51, Bowes-road, London, N., Nov. 5th, 1927.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Nov. 5th (p. 971), under the heading of New Drugs, there is a reference to certain remarks made by Sir William Willcox at a recent meeting of the Medico-Legal Society. As there is a specific reference to Dial, a barbituric acid derivative which we handle, we feel that it is incumbent upon us to submit for your consideration certain particulars relating to this drug.

Sir William Willcox is reported to have stated that during a period of 20 years there were 257 cases of fatal poisoning from the barbituric acid group of drugs. We feel justified in requesting that he will state further how many of these fatalities can be directly attributed to therapeutic doses of Dial? In making this request we should like to point out that during a considerable part of the period under review Dial was not even on the market. Moreover, in practically every case where Dial has been mentioned in connexion with an overdose of drugs, it has been found on investigation that there has been a history of other drugs being taken at the same time, resulting, no doubt, in a synergistic action. On the other hand, there are numerous cases on record in the medical journals where exceptionally large doses of Dial have been taken by accident or intent without the production of fatal results. We have in our possession the report of a case where 100 tablets (150 gr.) of Dial were taken and the patient recovered.

While we are in entire agreement with the statement that drugs possessing a hypnotic action should be used with care and caution and under medical advice, we feel justified in taking exception to the suggestion that statements as to their harmless nature (at any rate as regards Dial) should not be accepted at their face value. Any statements which have been made in advertisements regarding the efficacy, safety, and freedom from toxicity of Dial appearing in THE LANCET can, of course, be substantiated by reference to numerous authorities. Moreover, we feel that such advertisements would not have been inserted in your journal if the statements in them could not have been accepted at their face value.

Regarding the suggestion that such drugs are imported into this country with little restriction as regards duty, whereas similar products of British manufacture are not afforded like facilities, we should like to point out that no drug "similar" to Dial is manufactured in this country. Dial has been exempted from key industry duty for the reason that it is imported for manufacturing purposes, the tablets having been made in this country for many years past. Compounds of Dial and other tablets manufactured in Switzerland are, of course, subject to the full key industry duty of 33⅓ per cent.

We remain, Sir, yours faithfully,

THE CLAYTON ANILINE COMPANY, LIMITED.

10, Southwark-street, London, S.E., Nov. 12th, 1927.

*** Sir William Willcox is reported in THE LANCET of Nov. 5th (p. 971, col. 1) as having said: "It could not be too strongly emphasised that new organic drugs of hypnotic action should be used with great care and caution, and statements as to their harmless nature should not be accepted at their face value." These drugs have been placed on a statutory list of dangerous drugs, and Sir William Willcox is justified in contending that if anyone should state them to be harmless the face value of that statement should be critically examined. We are not aware that either of our correspondents has asserted the nature of their preparations to be "harmless" in opposition to the Home Office view.—ED. L.

CHRONIC EPIDEMIC ENCEPHALITIS:
TREATMENT BY INDUCED MALARIA.

To the Editor of THE LANCET.

SIR,—In connexion with two articles in THE LANCET of Oct. 22nd (pp. 860–862) concerning the treatment of chronic epidemic encephalitis by induced malaria, permit me to draw attention to another form of "fever therapy" which we have tried at the German Hospital. The Saxon Serum Works have supplied us with a preparation called "Saprovitan," consisting of a suspension of living non-pathogenic bacteria. This preparation, injected intravenously in increasing doses, produces a rigor with a temperature from 102°–104° F. within a few hours after the injection. The indications for its use are said to be the same as for fever therapy generally. Opinions differ, however, as to its efficiency as a substitute for malaria therapy. We have used it[1] amongst other cases, in a number of patients with chronic epidemic encephalitis (Parkinson's syndrome) allowing 8–10 rigors to occur in each case. In none of these cases did we see any beneficial effect on the symptoms; but we wish to emphasise the debilitating action of this "fever therapy," and, in agreement with P. K. McCowan and L. C. Cook, consider it to be a useless and unjustifiable method. I am, Sir, yours faithfully,

German Hospital, E., Nov. 11th, 1927. O. B. BODE.

SOME CASES OF ERYTHEMA NODOSUM.

To the Editor of THE LANCET.

SIR,—The contributions by Dr. Maurice Mitman and Dr. Ambrose W. Owen in your issues of Oct. 8th and Nov. 5th illustrate the fact that during the past 12 months there has been an epidemic outbreak of erythema nodosum in various parts of England. I have personally seen 16 cases during 1927, this being the highest number in any 12 months since I began keeping a record in 1907. Five or six cases in the year would be an average with me, but occasionally, at intervals of about four years, as this year and [as

[1] O. Bode and J. Axhausen: Erfahrungen mit Saprovitan. Deut. Med. Wochenschr., 1927, liii., 1185.

in 1913 and 1917, the number is doubled or trebled. The maximum number of cases is in the month of April. Erythema nodosum has frequently been noticed to follow upon septic trouble, but I have never noticed its occurrence, as Dr. Owen suggests, at a time when tonsillitis, pulmonary infarcts, pyelitis, or nephritis are unusually prevalent. Possibly erythema nodosum is a special form of streptococcal infection, and the various conditions which he mentions are also of streptococcal origin.

In reply to Dr. Owen's question as to whether the eruption is due to thrombosis or embolism of cutaneous vessels, I may say that I have had several erythematous nodules excised and cut in serial sections; the nodules all show a central thrombosed arteriole lying in the subcutaneous tissue.

I am, Sir, yours faithfully,

Clifton, Nov. 9th, 1927. J. O. SYMES.

MISLEADING QUALIFICATIONS.

To the Editor of THE LANCET.

SIR,—I write again simply to correct the statement made by "F.R.C.S. Edinburgh" that in Scotland the Scottish Fellowship is a compulsory passport to surgical appointments in teaching hospitals. The facts are against him. Classifying the qualifications of the surgical staff of the Glasgow Royal and Western Infirmaries and the Aberdeen and Dundee Royal Infirmaries as given in the Medical Directory of 1925, I obtain the following table:—

—	F.R.C.S. Eng.	F.R.C.S. Edin.	F.R.F.P.S.G.	C.M. or Ch.B. only.	Total.
Glasgow—					
Royal	2	1	9	1	13
Western ..	1	1	3	7	12
Aberdeen ..	2	2	Nil.	5	9
Dundee	2	3	Nil.	5	10
Totals	7	7	12	18	44

It may interest your readers to have the opinion of the General Medical Council on the general question, and with the kind permission of the Registrar I am able to publish his reply to an inquiry of mine.

I am, Sir, yours faithfully,

Nov. 14th, 1927. ETHICS.

*** The letter, which is signed Registrar, G.M.C., Oct. 27th, 1927, runs as follows:—

"In reply to your letter of the 23rd inst., I am directed to say that there appears to be a convention in England that the letters 'F.R.C.S.' represent the Fellowship of the Royal College of Surgeons of England. The letters 'E.' or 'Ed.' and 'I.' are generally added when similar qualifications obtained in Edinburgh and Ireland are used in England. In Scotland, however, and in Ireland, 'F.R.C.S.' alone would probably be taken to refer to the Royal Colleges in Edinburgh, or in Dublin, respectively; while 'F.R.C.S. Eng.' would be used with reference to the Royal College in London. There is certainly no universally accepted rule upon the subject; and there is nothing in Schedule A of the Medical Act, 1859, which would justify the Council in making a formal pronouncement such as you suggest."

RE OVARIAN GRAFTING IN WOMEN.

To the Editor of THE LANCET.

SIR,—I regret that recently an article purporting to be a personal interview with me and containing a highly sensational account of a private lecture given by me to a medical society has appeared in the London press. The facts of the case are these. The wife of one of our members is also a press reporter to several daily papers. She was not known to me by sight, but attended the lecture and sent a report to the lay press. The following morning before I was out of bed or had seen a newspaper I was rung up on the telephone by someone in London whom I took to be the publisher of a certain medical journal asking for an explanation of some points in my lecture. As I had just sent him the corrected proofs I answered quite frankly. Later I discovered my error, for several reporters called on me. My explanations to them only resulted in more "copy," and I have refused to see any more. I have also written to the London and Counties Medical Protection Society and to the various parties concerned.

I am, Sir, yours faithfully,

Manchester, Nov. 14th, 1927. A. C. MAGIAN.

HIRSCHSPRUNG'S DISEASE IN ADULTS.

To the Editor of THE LANCET.

SIR,—I agree with Dr. Hurst that this condition is by no means so rare in adults over 30, as stated by Dr. Cookson in your issue of Oct. 29th. The following table, which is taken from my book on "Diseases of the Rectum and Colon," shows the ages in 100 collected cases:—

Age.	Cases.	Age.	Cases.
Under 5	24	40–50	8
5–10	16	50–60	5
10–20	14	60–70	6
20–30	11	Over 70	4
30–40	7	Not stated	5

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY.

Hyde Park-place, W., Nov. 11th, 1927.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. A. Fairley is placed on the Retd. List at his own request.

ROYAL ARMY MEDICAL CORPS.

Capts. W. D. Newland and A. C. Taylor (Prov.) to be Majs. Temp. Lt. E. M. Wright relinquishes his commn.

TERRITORIAL ARMY.

Capt. J. F. O'Grady, from General Hospitals, to be Capt. Lt. J. J. Mitchell resigns his commn.

ROYAL AIR FORCE.

Flying Officer W. D. McKeown is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

The undermentioned Capts. (prov.) are confirmed in their rank: J. S. Riddle, Sukumar Dutta Gupta, D. MacD. Fraser, J. C. Drummond, and J. E. Gray.

Temp. Capt. Desraj Kehar resigns his temp. commn. and retains his rank.

Lt.-Col. W. F. Harvey retires.

DEATHS IN THE SERVICES.

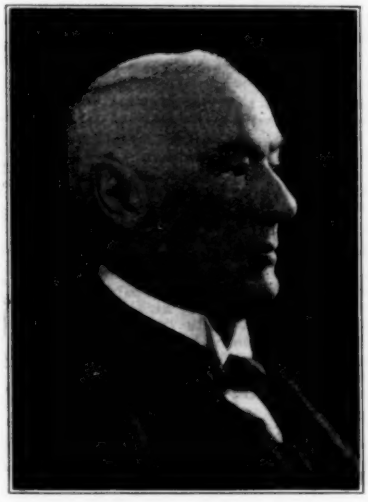
Fleet Surgeon Samuel Keays, R.N., retd., who died on Nov. 7th at Kingstown, Co. Dublin, qualified in medicine at the Royal College of Surgeons in Ireland in 1875 and entered the Royal Navy as a surgeon in 1878. He was employed on active service in various parts of the world, and was promoted to staff surgeon in 1890 and to fleet surgeon in 1899. After serving in the battleship *Ramillies*, and the *Clyde*, R.N.R. drillship at Aberdeen, he retired in 1903.

NORTH MIDDLESEX HOSPITAL.—In his annual report Lieut.-Colonel Spencer Mort, the medical superintendent, points out that a great many of the maternity cases sent to this hospital at Edmonton are those in which extremely severe complications have come on, and that the number of operations is correspondingly high. In the last 50 cases in which he has performed Cæsarean section, the mortality has been nil, with the exception of one patient who had cancer of the bowel, which proved fatal. The hospital is suffering from scarcity of nurses, and more room for patients is so urgently required. The accommodation for the medical staff is "quite unsuitable."

Obituary.

SIR PETER REILLY O'CONNELL, M.D., M.CH. R.U.I., D.L.

Sir Peter O'Connell, who died at Marseilles on Sept. 24th whilst on holiday, was for many years a distinguished figure in the public life of Belfast. Born in Co. Cavan, he went to the city as a young man in 1883, after studying medicine in Dublin and London and on the continent. His reputation even then had preceded him, and his abilities soon came to the fore when with a few colleagues he formed the nucleus of the present Mater Infirmorum Hospital. Here he laboured hard, both late and early, and when in 1900 the present building was opened with 200 beds, he was appointed senior surgeon. In this capacity he had ample scope for his talents, and soon his operative skill and clinical judgment brought patients from all over Ulster. Though a busy man, he spent much time in reading and writing on other subjects besides those of his profession, and he was interested in societies for the improvement of the people. He became prominent as a speaker, and at the request of many of the citizens entered public life as an Alderman of the City of Belfast. In the corporation he was soon an outstanding figure, taking a keen interest in public health, technical and educational committees. His gifts of oratory and sound argument gained him a high place in the esteem of his fellow-citizens, and in 1909 he was elected High Sheriff of the City by men who differed from him both in religion and politics, but recognised his great ability. As a reward for his services he was created a Knight Bachelor in 1908; he also became Deputy Lieutenant for the City. He was appointed on a commission to inquire into University education in Ireland, which resulted in the establishment of the National and Queen's University, and of the latter University he was appointed a senator, acting also as lecturer and examiner in surgery. Although devoting much of his energies to public affairs he always found time to attend the medical meetings and to contribute to their transactions, and for the year 1910–11 he served as president of the Ulster Medical Society. Sir Peter O'Connell retired about six years ago, and went to live in the suburbs of Dublin. During his frequent visits to Belfast he was always welcomed by his former associates, and in the places where he had once been prominent.



SIR PETER O'CONNELL.

A colleague, to whom we are indebted for these biographical details, writes: "In the Mater, where he had laboured for nearly 40 years, we shall miss his genial presence, his candid advice, his sallies of wit, his professional skill; but his name and fame is writ large in its history, and future generations will learn the deep debt they owe to 'Sir Peter.'"

Lady O'Connell, who survives him, is the daughter of the late Mr. Edward Hughes, J.P.

JOHN SINGLETON DARLING, M.D., M.CH. DUB.

DEEP regret is felt in Ulster at the death of Dr. J. Singleton Darling which occurred on Nov. 8th, at the age of 71, after a long illness. Dr. Darling received his medical education at Trinity College, Dublin, where he graduated in the year 1879. He afterwards studied in Vienna, having gained the medical travelling prize at Trinity College. He settled in Lurgan and soon acquired a large practice. He was appointed medical officer of the Lurgan Workhouse Infirmary and effected many improvements in that institution, which is now one of the best appointed and successful hospitals in Northern Ireland. Dr. Darling filled many important positions. He was at one time president of the Ulster Medical Society and of the Ulster branch of the British Medical Association. He took an active interest in the affairs of the Association, and at various times acted as a member of its Council. He was a regular attender at the quarterly meetings of the Ulster branch, and made many valuable contributions to its proceedings. Dr. Darling enjoyed in a high degree the respect and affection of his medical brethren. A man of considerable professional attainments, scrupulous honour, genial and fraternal character, he occupied a distinguished place in the ranks of the profession. He leaves a widow and a large family.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a congregation held on Nov. 12th the following degrees were conferred:—

M.B. & B.Chir.—J. L. Warner.
M.B.—W. H. Craib.

UNIVERSITY OF GLASGOW.—On Nov. 12th the degrees of M.B. and Ch.B. were conferred on Eric Dow, and the degree of B.Sc. on Martha Cleland, M.B.

UNIVERSITY OF MANCHESTER.—Dr. Reginald Ellis has been appointed assistant lecturer in applied physiology, and Dr. Marguerite F. Johnstone has been elected to the John Henry Agnew Fellowship in the Diseases of Children.

UNIVERSITY OF BIRMINGHAM.—On Nov. 11th the following prize medals were distributed:—

Arthur Foxwell Memorial Medal (awarded for Clinical Medicine in the Final M.B. Examination): Marjorie V. Martin.—Sampson Gamgee Memorial Medal in Surgery (awarded at Final M.B. Examination): Kenneth P. Fooks.—Senior Medical Prize: Frances M. Stockdale.—Senior Surgical Prize: Victor Goldman.—Midwifery Prize: Robert Anderson. Junior Medical Prize: John W. Notley.—Junior Surgical Prize: Beatrice M. Willmott.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council, held on Nov. 10th, Sir Berkeley Moynihan, the President, in the chair, the following resolution was adopted and entered on the Minutes:—

"On the occasion of the retirement of Mr. Frederic G. Hallett from the offices of Secretary to the Conjoint Examining Board and Director of Examinations in the Royal College of Surgeons, the Council desire to place on record their high appreciation of his services and the very warm regard which they entertain for him personally. Mr. Hallett's powers of organisation, his long experience in all matters relating to examinations, and his exceptional knowledge of regulations for medical education in this and other countries have been of great advantage to the College, and have given his services a special value and caused them to be held in the highest regard. The Council are fully conscious of the ability and zeal with which Mr. Hallett has carried out his duties during the long period of 50 years, and they trust that health and happiness may enable him to enjoy in his retirement the rest which he has earned so well. His unfailing courtesy and readiness to help will not be forgotten by those who have had the pleasure of being associated with him in the control and management of the affairs of the College, and the Council assure him that he carries with him their best wishes for his welfare in years to come."

With reference to the resolution carried at the annual meeting of Fellows and Members in November, 1926, the following resolution was unanimously adopted:—

"That, in view of the result of the recent postal vote of the Fellows, the Council is not prepared to take steps at the present time for altering the constitution of the College so as to give Members of the College direct representation on the Council."

THE Minister of Health and the Minister of Agriculture and Fisheries have appointed a Joint Advisory Committee, with Sir Horace Monro as chairman, to consider, and from time to time to report on, the pollution of rivers and streams, and on any measures which they think desirable for its diminution. The only medical member of the committee is Dr. H. Maclean Wilson. Communications should be addressed to Mr. G. C. North at the Ministry of Health.

A CONGRESS ON LIGHT AND HEAT IN MEDICINE.—The first International Exhibition and Conference on Light and Heat in Medicine and Surgery will be held at the Central Hall, Westminster, from Dec. 13th to 16th inclusive. The exhibition will be opened at 2.30 P.M. on Dec. 13th by Sir Alfred Mond. The arrangements are in the hands of the *British Journal of Actinotherapy* (17, Featherstone Buildings, London, W.C. 1), and medical men or others professionally interested, who wish to contribute papers or receive invitations, are asked to communicate their names.

BRITISH SERBIAN UNITS.—The annual re-union dinner of the British Serbian Units Branch of the British Legion, and of all friends of Serbia, will be held on Saturday, Dec. 3rd, at 7.15, at the Victoria Mansions Restaurant, 24, Victoria-street, Westminster. The President, the Rev. R. G. D. Laffan, will take the chair. Tickets may be had from Miss Marx, 24, Melcombe-court, Dorset-square, London, N.W. 1.

BRADFORD INFIRMARY.—Work has now begun upon the great new infirmary which is to contain 435 beds and to cost half a million. The block upon which the builders are engaged is to be a self-contained unit reserved for paying patients.

HOSPITAL ACCOMMODATION FOR JEWS.—Last week the Marquis of Reading opened new wards in the Jewish Maternity Home in Underwood-street, Whitechapel. The Hebrew community of Liverpool is laying plans for the provision of a Jewish ward in one of the city hospitals. It is complained that at present Jewish hospital patients are unable to obtain orthodox food, and that the unaccustomed diet "often has an adverse effect upon them."

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the annual meeting of the Faculty on Nov. 7th the following office-bearers were elected for the ensuing year: President, Dr. G. H. Edington; visitor, Dr. John F. Fergus; hon. treasurer, Mr. J. H. MacDonald; hon. librarian, Dr. E. H. L. Oliphant; representative on the General Medical Council, Dr. James A. Adams. Council: The President; visitor, treasurer, librarian, and representative on the General Medical Council, ex officio; Dr. John Henderson, Dr. H. L. G. Leask, Mr. R. Barclay Ness, Dr. T. K. Monro, Dr. W. G. Dun, Mr. J. Forbes Webster, Dr. J. M. Munro Kerr, Mr. Thomas Kay, Mr. John Patrick, and Mr. R. M. Buchanan. Dr. G. H. Edington, the new President, was invested with a badge of office, presented by his predecessor, Dr. R. M. Buchanan. The following candidate was admitted (after examination) as a Fellow of Faculty, Sheik Abdool Majid Sepher.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Mr. Arthur Edmunds will deliver a lecture on Practical Surgical Details on Monday, Nov. 21st, at 5 P.M., at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W. On Wednesday, Nov. 23rd, at 2.30 P.M., a special demonstration will be given at the Prince of Wales's General Hospital, Tottenham, N. On Thursday, Nov. 24th, at 2 P.M., Mr. Whitchurch Howell will give a surgical demonstration at the Queen's Hospital for Children, and on the same day, at 1 P.M., Mr. Whiting will demonstrate at the Royal London Ophthalmic Hospital, City-road, E.C. Members of the medical profession are invited to attend the lecture and demonstrations without fee. From Nov. 21st to Dec. 17th, at 5 P.M., at the West End Hospital for Nervous Diseases, a series of lecture-demonstrations will be given, illustrated by cases. A post-graduate course on Diseases of the Rectum will be held at the St. Mark's Hospital from Nov. 28th to Dec. 3rd. From Dec. 5th to 17th, at the Infants Hospital, an afternoon course on infants' diseases will be given under the direction of Dr. Eric Pritchard, and an afternoon course at the Hospital for Diseases of the Skin, Blackfriars, will be held between the same dates. During January courses will be given in medicine, surgery, and the specialties at the Prince of Wales's General Hospital and associated hospitals, in cardiology at the National Hospital for Diseases of the Heart, in diseases of children at the Children's Clinic, and in psychological medicine at the Bethlem Royal Hospital. Information, syllabuses, and tickets may be had from the Secretary of the Fellowship, at 1, Wimpole-street, London, W. 1.

UNIVERSITY OF SHEFFIELD.—Dr. Percival Hay has been appointed honorary lecturer in ophthalmology, and Mr. J. L. Grout, F.R.C.S. Edin., honorary lecturer in radiology.

JERVIS-STREET HOSPITAL, DUBLIN.—A new wing, with a laboratory and an X ray department, is being added to this institution at a cost of £50,000. The new buildings are nearly completed.

BIRMINGHAM STUDENTS' CARNIVAL.—This year's carnival for the benefit of the Birmingham hospitals has produced approximately £5500, the largest amount yet obtained.

CREMATIONS IN MANCHESTER.—The Manchester Crematorium, Limited, state that the total number of cremations since 1892 is 4974, the numbers for each of the last five years being as follow: 1923, 222; 1924, 234; 1925, 265; 1926, 297; and 1927, 352.

NEW CASUALTY DEPARTMENT AT WALSALL.—The number of casualties received at this hospital, made famous by Sister Dora, has so greatly increased that a new department is to be provided for their treatment. The secretary of the hospital recently pointed out to 20 insurance companies the extent of the benefits they derive from this institution, but received only one acknowledgment, with a donation of £1.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—The new out-patient department of this hospital at 234, Great Portland-street, London, W., will be opened by the Lord Mayor on Tuesday, Nov. 22nd, at 12.15 P.M. The building, which costs £58,500, contains departments for massage, electrical treatment, exercises, light treatment, X ray work, and surgical instrument and bootmaking workshops, and will be open for inspection between 11 and 12 o'clock before the opening ceremony.

ROYAL EAST SUSSEX HOSPITAL.—A new children's ward is to be built on the foundations of the nurses' home which were laid before the war. The extension will involve the building of a corridor, 100 feet in length, from the main building, and this corridor, which will be fitted with sliding windows of vitaglass, is to accommodate ten beds. The new ward is being given by Mrs. Whitefoord in memory of her son, and will hold 20 patients. When the enlargement is complete the hospital will have 154 beds instead of the present 114.

FREE TREATMENT FOR HOSPITAL SUBSCRIBERS.—The Manchester and Salford Hospital Saturday and Convalescent Homes Fund has approved of a scheme for securing free treatment in the hospitals of Manchester and Salford to all subscribers to the fund who consent to increase their subscriptions by 1*d.* to 2*d.* a week. Although the fund contributes £12,000 a year to the local medical charities, nothing is received in return, whereas in Birmingham and Leeds, where similar schemes are in operation, the contributors obtain free treatment. It is believed that by the adoption of the proposed plan an additional £20,000 a year would be received, 85 per cent. of which would go to the hospitals and the remainder to the convalescent homes.

PRESENTATIONS TO MEDICAL MEN.—A presentation of his portrait to Prof. R. B. Wild was made on Nov. 10th by Prof. G. R. Murray on behalf of Prof. Wild's past and present colleagues in the Faculty of Medicine in the University of Manchester and in recognition of his valuable services to medicine and education. Prof. Wild expressed a desire to offer the portrait to the University, on whose behalf it was gratefully accepted by the Vice-Chancellor. Prof. Wild retired last September from the Leech Chair of Materia Medica and Therapeutics, which he had held for a quarter of a century.—Dr. C. F. White, who for several years has been assistant port medical officer at Liverpool, and is about to leave the city to take up an appointment as a medical officer at the Ministry of Health, was on Oct. 27th presented by the staff of the department with a handsome chiming clock and a pipe. Dr. A. A. Mussen, who presided, paid a warm tribute to the efficiency which Dr. White had brought to bear on his work, and said they all regretted his departure.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Parliamentary Intelligence.

HOUSE OF COMMONS.

THURSDAY, NOV. 10TH.

Tuberculous Ex-Service Men and Treatment Allowances.

Mr. ROBINSON asked the Minister of Pensions whether it was now the practice to refuse treatment allowances to men suffering from tuberculosis and unable to work who were under treatment by their panel doctor, and what was the estimated saving that might result from the withdrawal of treatment allowances in these cases.

Mr. DENNISON asked the Minister of Pensions if his attention had been drawn to the concern among disabled men suffering from pulmonary tuberculosis at the reduction of pensions and the withdrawal of treatment allowances, and whether an instruction had been issued to the medical officers that men in receipt of 100 per cent. pension in respect of tuberculosis were to be taken off treatment allowances and put on their flat-rate pension.—Major TRYON replied: No general instruction has been issued that men suffering from tuberculosis in consequence of their war service are to have their treatment allowances withdrawn. Indeed, I find that some 1600 cases were admitted to such allowances in consequence of treatment during the quarter ended in September last. The provisions of the Royal Warrant make it a condition of the grant of these allowances that the patient is rendered unable to provide for himself in consequence of the treatment which is ordered for him. It is therefore the necessary duty of my department to review from time to time all cases in which allowances are being paid in order to see that the Warrant conditions are fulfilled. The terms of the Warrant apply to tuberculosis as well as to all other disabilities, but in the case of tuberculosis the circumstances of each individual patient are considered in consultation with the responsible medical officer of the local authority. So far from there being any attempt to reduce pensions in these cases, special arrangements have been made to ensure that any man whose treatment allowances are discontinued under the terms of the Warrant is examined in regard to his rate of assessment for pension purposes and any increase appropriate to his case is granted. These arrangements have in fact resulted in a substantial increase in the average rate of pension for this disability.

Pensioners and Poor-law Medical Attention.

Mr. GROVES asked the Minister of Pensions: (1) Whether he had given personal consideration to and sanction of the present practice of the Pensions Issue Office in deducting from a pensioner's allowance an amount said to be claimed by the West Ham Board of Guardians whenever a pensioner was sent into the Whipps Cross Hospital, which was within the West Ham Poor-law Union; and (2) whether his department made any inquiries as to the reasonableness of a demand upon a pensioner's allowance, when such pensioner entered an institution under a Poor-law authority, for any medical advice or attention.—Major TRYON replied: Under the provisions of the Royal Pension Warrants a claim made by a board of guardians in respect of a pensioner admitted to a Poor-law institution for maintenance or medical treatment not connected with his war service is met by repayment to the guardians out of the man's pension. The amount so deducted may not exceed the ordinary rate for the maintenance of inmates or the daily rate of pension in payment, whichever is the less. The provision referred to is not a new one, but has been in operation for many years and applies to all Poor-law institutions.

Dental Clinics.

Colonel APPLIN asked the Minister of Health whether his attention has been drawn to the establishment of dental clinics by various approved societies; and what steps he proposed to take in this matter.—Mr. CHAMBERLAIN replied: Approved societies have no power under the National Health Insurance Act to establish dental clinics, but a few clinics have been established by bodies indirectly associated with approved societies. I have referred the general question of the provision of dental treatment in clinics to a Special Committee representative of approved societies and dentists, and I am hoping very shortly to receive a report on the subject.

Poor-law Relief.

Mr. LANSBURY asked the Minister of Health the number of able-bodied persons, together with their dependents, in receipt of Poor-law relief, institutional and outdoor, during each of the 12 months ending Oct. 31st, 1927.—Mr. CHAMBERLAIN replied: The following is the information asked for:—Figures based on a classification distinguishing "able-bodied" persons are not now obtained. The available information is set out below.

1. Number of persons (not being persons suffering from sickness, accident, or bodily or mental infirmity and not being casuals) in receipt of institutional Poor-law relief in England and Wales.

	Men.	Women.	Children.	Total.
Jan. 1st, 1926	37,493	18,366	42,699	98,558
„ 1927	40,343	18,702	42,206	101,251

Corresponding particulars for each month are not available.

2. Average number, for each of the undermentioned months, of the persons in receipt of outdoor Poor-law relief in money or kind in England and Wales who were classified, in returns made by the guardians to the Minister of Health, as "persons ordinarily engaged in some regular occupation and dependent wives and children of those persons."

Month.	Men.	Women.	Children.	Total.
November, 1926 ..	389,513	368,188	732,166	1,489,867
December, 1926 ..	284,292	259,950	523,561	1,067,803
January, 1927 ..	177,054	153,800	316,470	647,324
February, „ ..	159,451	137,201	283,489	580,141
March, „ ..	150,644	129,255	265,786	545,685
April, „ ..	141,311	121,874	251,204	514,389
May, „ ..	134,576	115,909	238,397	488,882
June, „ ..	133,460	114,726	236,568	484,754
July, „ ..	129,878	111,952	230,666	472,496
August, „ ..	130,376	112,810	233,802	476,988
September, „ ..	127,825	110,404	227,756	465,985

October, 1927: Information not yet available.

Average Cost for Medicine for Insured Persons.

Mr. HARDIE asked the Minister of Health the average cost per person per form for medicine for insured persons in Glasgow, London, and any other large cities.—Mr. CHAMBERLAIN replied: I am not clear as to the precise information desired by the hon. Member, but I may say that the average cost per prescription during August last, the latest month for which figures are available, was as follows: London, 8·1*d.*; Birmingham, 7·8*d.*; Manchester, 8·9*d.*; Liverpool, 8·5*d.* As regards Glasgow I suggest that the hon. Member should address a question to the Secretary of State for Scotland. (This figure was given later as 13·41*d.*).

Position of Voluntary Hospitals.

Mr. THOMAS WILLIAMS asked the Minister of Health whether he was able to make any statement indicating what steps he was likely to take with regard to the Onslow Report on Voluntary Hospitals.—Mr. CHAMBERLAIN replied: I have already indicated that, in the present financial position, I cannot recommend any grant from public funds towards the cost of extensions of voluntary hospitals, but I am glad to be able to say that, since the report of the Commission was received, the position has improved and a considerable number of new beds have been provided or are in course of provision.

Birth Control and Decline in the Birth-rate.

Sir NICHOLAS GRATTAN DOYLE asked the Minister of Health whether his attention had been called to the decrease in the national birth-rate, and if he had considered the desirability of curtailing the activities of certain birth-control societies and other agencies.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part I have no control over the activities of these agencies.

Foreign Condensed Skimmed Milk.

Sir ROBERT SANDERS asked the Minister of Health whether inquiries had been made on behalf of his department as to the conditions of manufacture of condensed skimmed milk imported from Holland and Denmark; by whom the inquiries were made; and whether he would lay the report on the table of the House.—Mr. CHAMBERLAIN replied: My information is that the sale of condensed skimmed milk is not forbidden in Holland. Inquiries as to the conditions of production in Holland and Denmark have recently been made by Dr. J. M. Hamill, one of my medical officers, Mr. T. A. Hole, a milk inspector in my department, and Mr. James Mackintosh, Professor of Dairy Husbandry at the University of Reading. I am considering in what form I can best submit for the information of hon. Members the results of their investigation, including the scope of the regulations in force.

Luneside Sanatorium, Lancaster.

Mr. BROMLEY asked the Minister of Health how many of the inmates of the Luneside Sanatorium, Lancaster, lost their lives as a result of the recent flooding of that institution; if he had made any inquiries into the lack of precautions which allowed such an occurrence; and if any measures would be taken to make such an event impossible in future.—Mr. CHAMBERLAIN replied: I regret to say that three patients lost their lives as a result of the recent flooding of this institution. According to the press reports of the inquest the flooding was of an unprecedented character, and there was no suggestion that all reasonable precautions had not been taken. I am in communication with the Lancashire County Council on the question of the future use of this institution for tuberculous patients.

Dismissal of a Medical Officer.

Mr. WILLIAM THORNE asked the Minister of Health if it was his intention to hold an inquiry into the circumstances of the dismissal of the general medical officer of the women's section of the Park Prewitt mental institution, Basingstoke, which resulted in the wholesale resignation of the staff.—Mr. CHAMBERLAIN replied: The answer is in the negative. The dismissal of the medical officer in question is primarily a matter for the local authority by whom he was employed. As regards the alleged wholesale resignation of the female staff I am informed that out of a total staff of 138 only 32 resigned, and that on the 1st of this month the female nursing staff was only six below the normal strength.

Medical Tests for Driving Licences.

Sir HARRY BRITTAIN asked the Minister of Transport whether and when it was intended to introduce medical and other tests before granting driving licences.—Colonel W. ASHLEY replied: My proposals with regard to the conditions with which applicants for driving licences should comply are contained in Clauses 14 and 15 of the Draft Road Traffic Bill which I caused to be published and circulated some time ago.

Sale of Tuberculous Fish.

Sir WALTER DE FRECE asked the President of the Board of Trade if his attention had been drawn to the sale of tuberculous fish, and if he would have investigations made with a view to prohibiting such sales.—Mr. CHAMBERLAIN replied: No, Sir. I am advised that there is no danger of the communication of tuberculosis to man from the consumption of fish.

MONDAY, NOV. 14TH.

Proposed Medical Mission to China.

Mr. THURTLE asked the Under Secretary of State for India the reason for the refusal of the Government of India to allow the proposed medical mission of a non-political character to be sent to China.—Earl WINTERTON replied: The reasons for which facilities for the proposed medical mission to China were refused were, firstly, that the grant of facilities for a party of British subjects to serve even as non-combatants with one or other of the contesting factions in the civil war in China would have been likely to be construed as a departure by His Majesty's Government from their attitude of strict impartiality; and, secondly, that at a time when His Majesty's Government had caused all British subjects to be advised to withdraw from the interior of China, in order to avoid embarrassing incidents, it was impossible to allow a considerable party of British subjects to proceed to those parts of China where such incidents would have been most likely to occur.

India Office and "Mother India."

Mr. RENNIE SMITH asked the Under Secretary of State for India whether, in view of the feeling aroused in India by the publication in this country of Miss Katherine Mayo's book, "Mother India," he could say whether Miss Mayo was assisted in the production of this book by the India Office or the Government of India.—Earl WINTERTON replied: Miss MAYO received no assistance in the production of her book, either from the India Office or from the Government of India, beyond the supply of official information on matters of fact which is afforded to any member of the public who asks for it.

Sale of Opium in Rangoon.

Mr. KELLY asked the Under Secretary of State for India whether he was aware that at the monthly meeting of the Rangoon corporation in September resolutions were passed to the effect that in their opinion the reopening of opium registers for Burma consumers was not desirable and not in the public interest, and urging His Majesty's Government to veto the proposal to legalise the sale of opium in Rangoon; and what steps the Government proposed to take in the matter.—Earl WINTERTON replied: I have seen a press report of the resolutions referred to. The Government of Burma had already decided not to reopen the opium registers for Burman consumers without a clear mandate from those affected. The other resolution referred not to opium but to ganga. As regards the last part of the question I would remind the hon. Member that excise is a transferred subject.

Death and Invaliding Rate in Gold Coast Mines.

Mr. HAYES asked the Under Secretary of State for the Colonies the death and invaliding rate in the Gold Coast gold mines.—Mr. ORMSBY GORE (Under Secretary for the Colonies) replied: The total number of workers employed in the gold mines in the Gold Coast during the year April, 1926, to March, 1927, was 8240, and the deaths during this period were 98, of which 14 were due to accidents and 84 to diseases. The death-rate was therefore approximately 11·9 per 1000. No figures are available as to the invaliding-rate.

Government and the Licensing Laws.

Sir FRANK MEYER asked the Prime Minister whether it was his intention to set up a commission or committee to inquire into the working of the present Licensing Laws for the regulation of the consumption of alcoholic liquor; and whether he was aware of the dissatisfaction with the present laws.—Mr. BALDWIN replied: I am aware that there are many points in the existing licensing laws which may be said to dissatisfy different sets of opinions, and the whole question is under the consideration of the Government who are not prepared to make a statement at present.

Consumption of Milk in London.

Mr. HURD asked the Minister of Agriculture if he could give an estimate of the increased consumption of liquid milk in London in gallons and percentages in the past five years, allowance being made for any increase in the population; and what educational and other means were being taken to increase this consumption in the interests of public health and agriculture.—Mr. GUINNESS replied: In the half-yearly report of the National Milk Publicity Council the following figures are given, compiled from statistics rendered by the four principal railway companies for milk brought into London by rail:—

Year ending June 30th.	No. of gallons, in millions.	Percentage increase since 1923.
1923	72	—
1924	77	7
1925	99	37
1926	107	48
1927	117	62

It is further estimated that at least 5,000,000 gallons per annum are brought into London by road. The average increase in the population of Greater London over the period has been less than 50,000 per annum, that is, less than 1 per cent. The question of educational and other steps to increase the consumption of milk is dealt with at some length in a report on the Fluid Milk Market, which is to be issued in a few days as No. 16 of the Economic Series. Briefly, it may be said that up to the present such action has been limited to the steps taken by the National Publicity Council which is maintained by voluntary contributions from farmers, manufacturers, and distributors.

Small-pox Statistics.

Dr. VERNON DAVIES asked the Minister of Health for the small-pox statistics for England and Wales for the months of August, September, and October last, and the total number of cases since Jan. 1st, 1927.—Sir KINGSLEY WOOD replied: The numbers of cases of small-pox notified in the months of August, September, and October were 564, 505, and 795 respectively, and the total number of notifications during the period from Jan. 2nd last to Nov. 5th inclusive was 12,729. These figures are subject to revision.

Whipps Cross Hospital: Cost of Patients and Charges to Patients.

Mr. GROVES asked the Minister of Health the average cost of maintenance of the patients at the Whipps Cross Hospital of the West Ham Union.—Sir KINGSLEY WOOD replied: In the returns made to my right hon. friend's department the expenditure in respect of the Whipps Cross Hospital is not shown separately from that in respect of the Forest House and Forest House Cottages of the West Ham Union. The average weekly expenditure per inmate of this group of institutions for the year ended March 31st, 1927, was 45*s.* 10½*d.*

Mr. GROVES also asked the Minister of Health whether he was aware that, owing to the pressure upon the ordinary voluntary hospitals of the East End of London and their

restriction of accommodation, there had been an increase in the number of patients sent by medical men to the Whipps Cross Hospital; that these persons generally were working people who would not like normally to seek parish help and that if they had been received into the ordinary hospital they would have been asked what they could afford to subscribe; that the West Ham guardians made a detailed and heavy charge upon the whole of the members of the family of the inmate; and whether he would consider making such changes in medical treatment charges in such institutions that sick persons were only asked to subscribe similar sums to those charged by the local voluntary hospitals.—Sir KINGSLEY WOOD replied: It is the duty of a board of guardians to take all reasonable steps for the recovery of the cost of any relief which they may afford to sick or other persons, and they could not lawfully adopt a system of small fixed charges or limit their purview in deciding upon such cases in the manner which the question suggests is adopted by the authorities of voluntary hospitals.

Approved Societies and Convicted Persons.

Mr. THOMAS WILLIAMS asked the Minister of Health if he was aware that certain approved societies employed a rule to dismember an insured person on that person being convicted and punished for an offence; and what steps he intended to take to discourage the application of any such rule by which an approved society sought to supplement the punishment of a bench of magistrates.—Sir KINGSLEY WOOD replied: The rules of most approved societies provide that the committee of management may expel a member who has been imprisoned for any crime. Before a member can be expelled under this rule, however, the committee is required to give him a full opportunity of submitting his defence, and if a decision to expel him is arrived at he has a right of appeal, first to an independent arbitration tribunal, and finally to the Minister. My right hon. friend thinks, therefore, that insured persons are already sufficiently protected against a harsh or unreasonable application of the rule.

Drowning Fatality in a London Hospital.

Mr. DAY asked the Minister of Health whether his attention had been drawn to the remarks of the coroner at an inquest held at Hammersmith regarding the death of a woman who was found dead through drowning in a bath full of water at a hospital, and who had taken a bath against instructions; and whether any precautions had been taken by his department to instruct the hospital authorities under his control to carry out the coroner's suggestions to have all taps in bathrooms controlled to prevent such further possibilities.—Mr. CHAMBERLAIN replied: I am aware of the facts of this case. The importance of having keys to all hot water taps in the bathrooms of Poor-law institutions has for many years been emphasised by the central authority, and I am informed that such keys have now been fitted to all the bath taps at this institution.

TUESDAY, NOV. 15TH.

Consumption of Milk in Great Britain.

Mr. ROBERT MORRISON asked the President of the Board of Trade the consumption of milk per head of the population in Great Britain and Northern Ireland in the years 1924, 1925, and 1926, respectively.—Mr. GUINNESS replied: Until the results are available of the last census of agricultural production in Scotland and Northern Ireland, it is only possible to make very approximate estimates of consumption of milk in the United Kingdom. It has been calculated, however, that the per head consumption of liquid milk in the United Kingdom during each of the years specified in the question was about 20 gallons. During the same periods the amount of tinned milk consumed was equivalent to rather over two gallons of liquid milk per head.

Village Settlements for Tuberculosis Treatment.

Mr. HORE-BELISHA asked the Minister of Health whether his attention had been called to the resolution passed by the Plymouth insurance committee, requesting that the Government be urged to make provision enabling and requiring local authorities dealing with the treatment of tuberculosis, or groups of these, to formulate schemes for village settlements where suitable ex-sanatorium patients and their families might be housed and appropriate remunerative employment provided under medical supervision on the lines adopted at the Cambridgeshire tuberculosis colony at Papworth Hall; and what was the policy of his department with regard to this matter.—Sir KINGSLEY WOOD replied: The answer to the first part of the question is in the affirmative. As regards the second part of the question, there are three village settlements in existence and a fourth is under consideration. My right hon. friend's view is that fuller experience of the results in these cases must be awaited before attempting such widespread and costly developments as are suggested in the question.

Medical Adviser to Mines Department.

Mr. LUNN asked the Secretary for Mines if he could now give the name of the new medical adviser to the Mines Department and his qualifications to enable him to deal with the various diseases peculiar to the mining industry.—Colonel LANE FOX replied: Dr. S. W. Fisher has been appointed Medical Inspector of Mines and Quarries. Since his demobilisation in 1919 Dr. Fisher has practised in a colliery district in South Wales, where he has obtained general experience of mining conditions and of the treatment of cases of mining accidents and disease. He has taken special interest in silicosis and nystagmus, in which he has carried out research work, and in beat-hand, beat-knee, and beat-elbow.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, Nov. 22nd.—5 P.M., MEDICINE. Clinical meeting in the Library of St. Bartholomew's Hospital Medical College.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Paper: Dr. Edgar Obermer: The Endocrinology of Tuberculosis. 5.30 P.M., BALNEOLOGY. Presidential Address: Dr. L. C. E. Calthrop: The Scientific Basis of the Practice of Medical Hydrology. A polychromide film of the solar eclipse, 1927, will be shown after the Presidential Address.

THURSDAY.—8.30 P.M., DISEASE IN CHILDREN, THERAPEUTICS, UROLOGY. Special discussion on the Treatment of Pyuria in Children. Openers: Dr. E. A. Cockayne (Study of Disease in Children), Dr. E. H. Lepper (Therapeutics), and Mr. John Everidge (Urology).

FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) 8 P.M., EPIDEMIOLOGY. Paper: Dr. E. H. R. Harries: Immunity in the Making.

MEDICO-LEGAL SOCIETY, at 11, Chandos-street, Cavendish-square, W.

THURSDAY, Nov. 24th.—8.30 P.M., Paper: Captain Norman Parkes: A Case of Pathological Drunkenness as a Defence of Insanity at a Murder Trial.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, Nov. 25th.—8.30 P.M., Papers will be read by Dr. P. H. Manson-Bahr and Dr. H. S. Stannus on Yaws. A discussion will follow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, Nov. 21st, to SATURDAY, Nov. 26th.—FELLOWSHIP OF MEDICINE. Special lecture at the Medical Society, 11, Chandos-street, Cavendish-square, W., on Mon., at 5 P.M., by Mr. A. Edmunds: Practical Surgical Details.—PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N. Wed., 2.30 P.M., Special demonstration by Dr. Browning Alexander.—QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, E. Thurs., 2 P.M., Special demonstration by Mr. Whitchurch Howell.—ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C., Thurs., 1 P.M., Special clinical demonstration by Mr. Whiting. The above lectures are free.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Post graduate course in Medicine, Surgery, and Gynæcology, second week.—ST. PETER'S HOSPITAL, Henrietta-street, W.C. Special course in Urology.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Lecture-demonstrations illustrated by cases, daily, at 5 P.M., for four weeks. Further information from the Secretary.

CHARING CROSS HOSPITAL.

THURSDAY, Nov. 24th.—3 P.M., Sir Archibald Garrod: Recent Advances in Science in Relation to Medicine and Surgery (Huxley Lecture).

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

WEDNESDAY, Nov. 23rd.—4 P.M., Dr. C. E. Lakin: Clinical Demonstration of Medical Cases.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, Nov. 21st.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Donald Armour: Operations. 2 P.M., Dr. Trevor Davies: Gynæcological Out-patients.

TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 2 P.M., Mr. Addison: Operations. 4.30 P.M., Dr. Scott Pinchin: Cardiac Irregularities (lecture).

WEDNESDAY.—10 A.M., Dr. Owen: Children's Department. 10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations.

THURSDAY.—11 A.M., Resident Assistant Surgeon: Ward Demonstrations. 3 P.M., Sir Henry Simson: Gynæcological Ward Visit. 4.30 P.M., Mr. Tyrrell Gray: Gastric and Duodenal Ulcer (lecture).

FRIDAY.—11 A.M., Dr. Pritchard: Modern Methods in Medicine. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily, 10 A.M. to 5 P.M., Saturdays, 10 A.M. to 1 P.M., In- and Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, Nov. 21st.—2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics. Operations.

WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

There will also be a special demonstration of Surgical Cases on Tuesday at 2 P.M., and of Medical Cases on Friday at 2 P.M., by Mr. W. E. Tanner and Dr. L. R. Yealland respectively.

ROYAL NORTHERN HOSPITAL, Holloway, N.: POST-GRADUATE INTENSIVE COURSE.

MONDAY, Nov. 21st.—2.15 P.M., Dr. W. R. Reynell: The Epilepsies. 3.15 P.M., Mr. Kenneth M. Walker: Tuberculosis of the Genito-urinary Tract.

TUESDAY.—2.15 P.M., Mr. T. Twistington Higgins: Demonstration of Surgical Cases. 3.15 P.M., Dr. C. Gouldesbrough: A Demonstration of X Ray Methods in the New Department.

WEDNESDAY.—2.15 P.M., Dr. H. Semon: Ringworm. 3.15 P.M., Dr. J. W. McNee: Recent Work on Acute Specific Fevers.

THURSDAY.—2.15 P.M., Mr. John B. Hunter: Head Injuries. 3.15 P.M., Mr. C. S. Lane-Roberts: Failed Forceps Cases.

FRIDAY.—2.15 P.M., Mr. A. M. Zamora: Acute Ear Infections. 3.15 P.M., Mr. F. D. Saner: Demonstration of Surgical Cases.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 22nd.—5 P.M., Dr. J. A. Drake: Leprosy.

THURSDAY.—5 P.M., Dr. A. Whitfield: Tuberculosis Cutis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Nov. 25th.—4 P.M., Mr. A. Brown: Significance of Aural Pain.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

THURSDAY, Nov. 24th.—4 P.M., Dr. Pearson: Abdominal Enlargement.

ANCOATS HOSPITAL, Mill-street, Manchester: POST-GRADUATE LECTURES.

THURSDAY, Nov. 24th.—4.15 P.M. (tea at 3.45 P.M.), Mr. E. E. Hughes: Diagnosis and Treatment of Common Affections of the Rectum.

ST. PAUL'S HOSPITAL, Endell-street, W.C.: POST-GRADUATE COURSE.

THURSDAY, Nov. 24th.—4.30 P.M., Mr. Frank Kidd: Treatment of Tumours of the Bladder.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, Nov. 22nd.—4.15 P.M., Mr. J. Morley: The Mechanism of Abdominal Pain.

FRIDAY.—4.15 P.M., Dr. R. Veitch Clark: Immunisation against Diphtheria and Scarlet Fever.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH, St. Andrews.

TUESDAY, Nov. 22nd.—4 P.M., Prof. A. Young: Some Surgical Aspects of Gastric and Duodenal Ulcer. Discussion to be opened by Dr. Norman McLeod.

FRIDAY.—4 P.M., Case reading and discussion, in which all medical practitioners are invited to take part.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, Nov. 25th.—3.30 P.M., Dr. Skinner: Neurological Cases.

PEOPLE'S LEAGUE OF HEALTH.

THURSDAY, Nov. 24th.—6 P.M. (at 11, Chandos-street, Cavendish-square, W.), Prof. M. S. Pembrey: Excretory Systems.

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.

WEDNESDAY, Nov. 23rd.—4 P.M., Dr. A. D. Fordyce: Prevention of Heart Disease.

CHADWICK PUBLIC LECTURES.

TUESDAY, Nov. 22nd.—8.15 P.M. (in the Lecture Hall of the Royal Society of Arts, John-street, Adelphi, W.C.), Major Harry Barnes, F.R.I.B.A.: The History of Housing, 1885–1927.

Appointments.

HAINE, A. W. P., M.B., Ch.B. Edin., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Scalloway District of the County of Shetland.

Sheffield University: HAY, P. J., M.D. Edin., Hon. Lecturer in Ophthalmology; GROUT, J. L. A., F.R.C.S. Edin., Hon. Lecturer in Radiology.

The Sheffield Royal Hospital: ABERCROMBIE, R. G., M.D. Camb., Hon. Physician for Orthopædic Diseases; MACKIE, E. G., M.B., Ch.B., D.O.M.S. St. And., Hon. Assistant Ophthalmic Surgeon; IMRIE, C. G., M.D., M.R.C.P., Hon. Assistant Physician; CALLCUTT, J. S., M.B., Ch.B. Sheff., Resident Surgical Officer; BEATTIE, W., M.B., Ch.B. Glasg., Senior Casualty Officer; FLACK, H., M.B., Ch.B. Belf., and GIRLING, W. N. M., M.B., Ch.B. Edin., House Surgeons; LYNN, A., M.B., B.Ch., B.A.O., and ARNISON, G. H., M.B., Ch.B. Sheff., House Physicians; HYMAN, W., M.R.C.S., L.R.C.P., Aural House Surgeon; MAXWELL, C. G., M.B., Ch.B., Ophthalmic House Surgeon; WITHEROW, J., M.B., Ch.B., B.A.O., and PATERSON, A. J., M.B., B.Ch., B.A.O., Assistant Casualty Officers; and RAINSFORD, C., M.B., Ch.B., B.A.O., Resident Anæsthetist.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Assistant in Pathology. £250 12s.

Acton Hospital, Gunnersbury-lane, W.—Res. M.O. £150.

Bristol General Hospital.—Hon. Clin. Assts.

Burnley Victoria Hospital.—H.S. £150.

Bury Infirmary.—Sen. H.S. At rate of £200.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Canterbury, Kent and Canterbury Hospital.—Third Res. M.O. At rate of £125.

Chelsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.

Chester, Wrenbury Hall Tuberculosis Training Colony.—H.P. £250.

City of London Hospital for Dis. of Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.

City of London Maternity Hospital, City-road, E.C.—Two Asst. Obstet. Surgs. Also Asst. Res. M.O. At rate of £80.

Croydon General Hospital.—Res. M.O. £200.

Durham County Council Education Committee.—Asst. School M.O. £600.

Evelina Hospital for Children, Southwark, S.E.—H.S. £120.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Golden-square Throat, Nose and Ear Hospital.—H.S. £100.

Hospital for Sick Children, Great Ormond-street, W.C.—Asst. Pathologist. £400. H.P. and H.S. At rate of £50. Also Med. Reg. £250.

Hull, Tuberculosis Sanatorium, Cottingham, E. Yorks.—Res. M.O. £485.

Hull and Goole Port Sanitary Authority.—Asst. M.O.H. £750.

Inverness, Northern Infirmary.—Sen. H.S. £120.

Ipswich, East Suffolk and Ipswich Hospital.—Res. M. and S.O. £350 if single; £500 if married. Also vacancy on Visiting Staff for X ray, &c.

Liverpool School of Tropical Medicine.—Lectureship in Tropical Sanitation, &c. £500.

London Hospital, E.—First Asst. in Dept. of Dermatology and Syphilology. £300.

London Lock Hospital, 91, Dean-street, W.—H.S. At rate of £200.

Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.

Manchester, Northern Hospital for Women and Children.—Hon. Asst. Surg. Also Sen. H.S. and Jun. H.S. £130 and £100 respectively.

Mellon, Suffolk, St. Audry's Hospital for Mental Diseases.—Jun. Asst. M.O. £300.

New Zealand Research Laboratories.—Dairy Research Bacteriologist. £850.

Nigeria.—Four M.O.'s for Tsetse-fly Investigation. Each £660

Northern Hospital, Winchmore-hill, N.—Asst. M.O. in Post-Encephalitis Lethargica Unit. £550.

Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120.

Papworth Village Settlement.—H.P. At rate of £100.

Plymouth County Borough.—Asst. M.O.H. £750.

Prince of Wales's General Hospital, N.—Hon. Clin. Assts.

Queen's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100.

Royal Free Hospital, Gray's Inn-road, W.C.—Surg. Reg. £200. Med. Reg. and Gynæcol. Reg. Each £100. Also H.S.'s., H.P., Second H.P., and Obstet. Asst.

Royal London Ophthalmic Hospital, City-road, E.C.—Hon. Dent. S. Also Two Assistants in Refraction Dept. for L.C.C. School-children. At rate of £160.

Royal Northern Hospital, Holloway, N.—Ophth. S.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Anæsthetist. At rate of £25.

Salisbury General Infirmary.—H.S. £150.

Shanghai Municipal Council, Public Health Dept.—Asst. Radiologist. £1050.

Sierra Leone, School Laboratory, Freetown.—Two Research Assts. Each £600.

Stafford County Mental Hospital.—Second Asst. M.O. £600.

Staffordshire Mental Hospital, Cheddleton, Leek.—Jun. Asst. M.O. £350.

Stirling District Mental Hospital, Larbert.—Sen. Asst. M.O. £400.

Swansea Hospital.—H.S. to Ophth. and Aural Depts. £150–£200.

Warwick County Mental Hospital, Hatton.—Asst. M.O. £300.

West London Hospital, Hammersmith, W.—H.P., H.S., Res. Asst., Cas. O., and Aural and Ophth. H.S. Each at rate of £100. Also Radiographer. £250.

Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons at Aberlour (Banffshire) and Southwell (Nottinghamshire).

Births, Marriages, and Deaths.

BIRTHS.

BLACKLEY.—On Nov. 3rd, at Warminster, the wife of H. L. Blackley, M.D., of a son.

BROWN.—On Nov. 9th, at Riverhead, Sevenoaks, the wife of W. G. Scott Brown, M.B., B.Chir. Camb., of a daughter.

SMYTH.—On Nov. 8th, the wife of Dr. A. J. Smyth, Bole Hall, Tamworth, Staffs, of a daughter.

DEATHS.

DALGLIESH.—On Nov. 9th, at Winchester-terrace, Newcastle-upon-Tyne, Jonathan Dalgliesh, M.R.C.S., L.S.A., late of West-parade.

GRAY.—On Nov. 10th, Agnes Hood Gray, M.B., B.S., of Welwyn Garden City.

GREEN.—On Nov. 6th, at the Old Parsonage, Dorchester, Alfred Green, M.R.C.S., L.R.C.P.

JEFFREYS.—On Nov. 10th, at a nursing home, Swansea, Alfred Jeffreys, L.R.C.P. Lond., M.R.C.S. Eng.

JOHNSTONE.—On Nov. 5th, suddenly, at Edinburgh, John Carlyle Johnstone, M.D., late of Melrose.

MUGFORD.—On Nov. 7th, suddenly, Sidney Arthur Mugford, M.R.C.S., L.R.C.P., of North-side, Clapham Common, aged 65.

PEARSE.—On Nov. 11th, at Rue Gambetta, Villefranche-sur-Mer, Wilfrid William Pearse, M.D., D.P.H., late M.O.H. Hong-Kong.

RIORDAN.—On Nov. 11th, at Southsea, Colonel William Edward Riordan (late R.A.M.C.), aged 87.

ROSE.—On Nov. 13th, at Chantry-road, Clifton, Bristol, Frank Herbert Rose, M.R.C.S., L.R.C.P. Lond., aged 71.

SMART.—On Nov. 10th, at Shepherds House, Marden, Kent, Dr. Alfred Smart.

THOMPSON.—On Nov. 12th, at Stargill, Kew-road, Richmond, suddenly, Dr. Maitland Thompson, formerly of Hemel Hempstead, Herts, aged 66.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

A DISCUSSION ON CONTRACEPTION.

EFFECTS ON THE FEMALE SEXUAL ORGANS.

IN the April number of the *Catholic Medical Guardian* appeared an article by Dr. F. J. McCann on the Effects of Contraceptive Practices on the Female Sexual Organs, which has since been reprinted in pamphlet form[1] by the League of National Life, the objects of which are "to combat the theory and practice of contraception (birth prevention), to oppose any form of State or municipal assistance for the promotion of contraception, and to uphold the honour and blessing of parenthood." The article opens with a review of the evidence forthcoming from observations on animals, from which the author concludes that the seminal fluid possesses for the females other than merely fertilising functions. After considering the complex structure and chemical composition of spermatozoa, Dr. McCann writes: "I refuse to believe that in the human species this complex chemical solution—the seminal fluid—containing millions of spermatozoa has no other function than that of providing one spermatozoon for the fertilisation of an ovum" (p. 4). Though the belief that the seminal fluid, apart from its fertilising agency, exerts an influence on the metabolism of the female is not new, Dr. McCann's conception of how this influence is brought about is not the one usually held. After commenting upon the observations of Kohlbrugge that in the mouse, rabbit, and bat spermatozoa may penetrate the uterine mucosa, Dr. McCann says: "It may yet be shown that in the human species spermatozoa do unite and combine with other cells besides the ovum, and thereby exert an important metabolic influence" (p. 4). Later in the paper, however, the author treats the hypothesis above adumbrated as definitely proved. This transition from supposition to affirmation is indicated by the following two sentences: "There is no definite proof as yet available of the metabolic influence of the different components of the seminal fluid, and the special claims made for the prostatic secretion are not only unconvincing but fantastic" (p. 10); and "Thus if the seminal fluid be prevented from being deposited in the vagina, or if so deposited, it be prevented entering the uterus, or again, if it be so altered by chemicals that the spermatozoa are killed, the physiological value of coitus is nullified" (p. 9). The nullification of the physiological value of coitus following the destruction of spermatozoa is not here advanced as a hypothesis; it is stated as a fact. From these two sentences it is clear that Dr. McCann thinks that physiological benefit, apart from fertilisation, is derived by the woman, not from the absorption of prostatic secretion, but from the entry of living spermatozoa into the uterus.

The So-called Malthusian Uterus.

In Dr. McCann's view contraceptive practices injure the woman in two distinct ways. The first depends on the deprivation which she suffers when living spermatozoa are prevented from entering the uterus: the second consists in mechanical and chemical irritation caused to the lower genital passages by the use of contraceptives. "Sooner or later," says the writer, describing the first process (p. 10), "a woman deprived of the full physiological value of sexual union develops important changes in her genital organs .... The changes produced in the uterus cause a slight uniform enlargement, with uniform softening of the cervix and body, which I named the 'Malthusian uterus,' increased loss of blood at the menstrual periods, increased mucoid discharge during the menstrual intervals, together with a certain amount of backache and discomfort. There is likewise an anxious drawn appearance in the woman's face, through the fear of the failure of the contraceptive methods and the fear of pregnancy." Dr. McCann has also observed, as part of the Malthusian uterus syndrome, thickening of the Fallopian tubes, "while there are doubtless changes in the ovaries which will be discovered by further research; but meantime lutein cysts are occasionally produced as a result of contraception, and probably also fibrotic or sclerotic changes" (p. 12). Under the second heading—that of injury to the lower genital passages caused by contraception—are enumerated the following conditions: cinchonism and uterine hæmorrhage attending the use of quinine suppositories; vaginitis caused by douching with alum and lysol solutions (the Malthusian uterus may also be caused by cold douching); uterine and tubal infections caused by forgotten sponge pessaries that have become septic; and cervical lacerations caused by wish-bone pessaries.

[1] The Effects of Contraceptive Practices on the Female Sexual Organs. By F. J. McCann, M.D., F.R.C.S. London: Simpkin, Marshall, Hamilton, Kent, and Co., Ltd. Pp. 16. 1s.

The conclusions reached by Dr. McCann in this paper are severely criticised by Dr. F. M. R. Walshe in the July number of the same journal. The Catholic Church, he says, teaches that it does not lie within the province of the doctor to give advice touching the ethical and spiritual life of his patients. In a paper on birth control read before the Guild of SS. Luke, Cosmas, and Damian, Fr. Vincent McNabb stated explicitly that a patient consults his or her doctor solely upon the physiological and pathological issues of the case, and the doctor has no right to use the words "ought" or "ought not" in giving advice, since the ethical category is the domain of the individual's spiritual adviser. Thus, argues Dr. Walshe, the Catholic doctor should confine himself to the purely medical aspects of his problems, and should refuse to allow his judgment thereupon to be influenced by consideration of the ethical value of the practice under discussion. Further, in this particular question, we shall refrain from generalising, with propagandist intent, upon data which the experience of multitudes of women may later prove to be inadequate. Turning to Dr. McCann's paper as constituting "the first attempt to assemble any body of observed facts worthy of serious consideration," Dr. Walshe first comments on the lack of confirmation which this paper has received from other gynæcologists as competent and well placed to observe the effects of contraception as is Dr. McCann. It is then argued that, if the syndrome of the Malthusian uterus is the outcome of seminal deprivation, it should be a matter of indifference whether the lack arises from contraceptive practice or from the denial of sexual activity which is necessarily imposed on all single women—an implication which it would require much courage to push to a logical conclusion. Further, Dr. Walshe has clearly misunderstood Dr. McCann's perhaps somewhat ambiguously-stated views as to the element in the seminal fluid which is of physiological benefit to the woman. Dr. Walshe goes on to say: "On the clinical side let us take the most striking pathological lesion that Dr. McCann attributes to contraception—the so-called 'Malthusian uterus.' We have a slight uniform enlargement and softening of uterus and cervix, irregularity and excess of menstruation, mucoid discharge, headache, and pelvic discomfort. The patient has an anxious and drawn countenance, the alleged expression of her perpetual dread of conceiving. This clinical and pathological state is attributed by Dr. McCann to sexual excitation unaccompanied by the hypothetical effects derived from the seminal fluid. We submit that the indisputable fact is that the lesion and its associated symptoms have nothing whatever specific about them, may be due to causes wholly unrelated to contraception, and occur in women who have never indulged in it. Further, in women who have done so and present this lesion, there is no discoverable relationship of cause and effect. Therefore, in the absence of any reasoned case for the ætiology invoked by Dr. McCann, it is not hard to determine by what familiar paths he has arrived at his conclusion." Dr. Walshe ends the paper by stating it as his view that the Catholic doctor can only contribute honestly and helpfully to the end which, in this matter, the Catholic Church has at heart (namely, the minimisation of contraceptive practice) by being given the latitude to use his influence with his patients in matters of ethical and spiritual import. Indeed, it is well-nigh impossible for the doctor to avoid assuming the rôle of moral adviser as long as it is conceded that psychotherapy falls within his province.

The October number of the *Catholic Medical Guardian* contains further contributions by these writers, the most notable feature of which is a qualification made by Dr. McCann to the conditions under which he holds that seminal deprivation can be harmful to women. This deprivation is apparently only regarded as harmful when the woman's "sexual appetite has been habitually roused and thwarted." Injury would thus not be sustained by unmarried or sexually abstinent married women as a result of seminal deprivation, but only by those women who practise contraception. The "thwarting" of the sexual appetite referred to is clearly not a psychic thwarting, because investigations have shown that in the great majority of cases the woman's orgasm is unaffected by the use of proper contraceptives. The thwarting would rather seem, in Dr. McCann's view, to be of the nature of a biochemical deprivation, in which case it is not easy to see how such deprivation differs from that sustained by unmarried women.

Limitation of Present Knowledge.

From these two papers it is clear that data with regard to the harmfulness or otherwise of contraceptive methods are still conspicuously lacking. It is at present unknown whether, during coitus, spermatic fluid in large quantities enters into the human uterus. It is maintained by some that the os dilates during the orgasm of the woman and that it may then even admit the glans of the penis. Though evidence is available that this happens in certain animals there is at present little to show that it occurs in human beings. The site of absorption of the seminal fluid in the genital tract of the female is undetermined; the constituent of that fluid (whether spermatozoa, prostatic, or other glandular secretion) which in particular has physiological value for the female, has not been ascertained; it is even disputed whether the seminal fluid is absorbed, in a beneficial physiological sense, by the woman at all. Further, the evidence propounded by Dr. McCann hardly covers all kinds of contraceptives. Thus quinine suppositories are now being displaced in favour of suppositories containing lactic acid and chinosol. Recently another suppository, the spermicidal activity of which is said to depend on the evolution of CO_2, has come upon the market. It is as yet not definitely known whether these suppositories cause harm; neither have their spermicidal powers in vitro been published. The spermicidal action of at least two kinds resides in the acid they contain, it being known that the movements of spermatozoa are inhibited by acids in low concentration. It is not yet definitely determined what degrees of acidity will, in different lengths of time, and at different temperatures, destroy human spermatozoa. Further, the degree of acidity which may be achieved, under different conditions, by the vaginal secretions of women is not certainly known, neither has it been established beyond question whether acidity may be influenced by constitutional factors, or whether it is always produced by bacteriological activity alone.

Few responsible doctors would recommend a sponge pessary (especially singled out for condemnation by Dr. McCann), which is notoriously capable of becoming infected, to a woman who was not equal to the task of keeping it clean; and very few would under any circumstances recommend a wish-bone pessary. And the fact remains that contraceptives of various kinds are used by hundreds of thousands of women who, to their knowledge, suffer no harm from them. Moreover, there are not lacking among these, women who admit an improvement in general health from discontinuance of the practice of coitus interruptus and liberation from the anxieties which so frequently attend this form of birth control. And lastly, even if it were established that all existing methods of contraception are injurious on medical grounds, it would hardly follow that a fool-proof, harmless, and certain method was incapable of being discovered in the future.

Beginnings of Research.

It is therefore interesting to learn that research upon this subject is proceeding in this country and in America. In a recent issue of the *Medical Journal and Record* (New York, May 18th, 1927) will be found an article by Dr. Robert Latou Dickinson, which describes a comprehensive scheme of research now being undertaken by the American Birth Control League. In this country a Birth Control Investigations Committee has been founded under the chairmanship of Sir Humphry Rolleston (see THE LANCET, Oct. 29th, p. 944) to conduct statistical research upon the efficacy of contraceptives now in use in different parts of the world; for this purpose it has prepared a questionaire which, if filled in in a sufficient number and a sufficient variety of cases, will yield that quantity of accurate statistical information which is now lacking. This committee is also seeking to discover new contraceptive methods free from the various drawbacks which affect most existing ones. Any doctor who may possess data likely to yield relevant information is invited to communicate with the Secretary of the Committee, the Hon. Mrs. Marjorie Farrer, 41B, Clanricarde-gardens, London, W. 2.

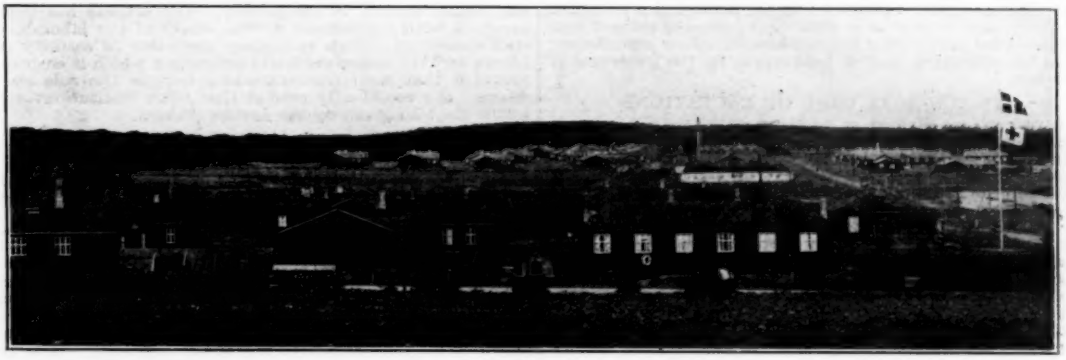
THE WALTER AND ELIZA HALL INSTITUTE OF RESEARCH.

AN interesting feature of the eighth annual report of this research institute at Melbourne is the evidence it affords of constant intercommunication with this country, both through interchange of workers and of material. A biochemist from Cambridge has just been appointed and will continue studies on hæmoglobin begun in Sir Frederick Hopkins's laboratory. The varied and valuable pieces of work being carried out include research into the pathology and treatment of hydatid disease, with a survey of over 3000 cases in which complement fixation, intradermal reactions, and precipitin reactions have been done; the same tests in bilharzia disease; the immunity reactions of fluke infestation in sheep; studies on pancreatic regeneration in guinea-pigs; the bacteriology of puerperal sepsis; the end-results of tuberculous disease of the hip; and work on cancer and dental decay. It is clear that the work is as wide in scope as it is careful in detail. A good deal of routine serological and biochemical work is carried out, as well as ordinary clinical pathology. During the year a hundred new colour preparations were added to the museum, and the catalogue was completed. The institute library has also made good progress.

THE "VICTIMS OF PEACE": HALD SANATORIUM, VIBORG.

DENMARK, during the war, gave shelter to many English soldiers and sailors, who, though officially interned as "prisoners of war," were treated as honoured guests. For the housing of them and soldiers of other nationalities, including Russians and Germans, a large camp, with the long, familiar wooden huts, was established on the great heath of Hald, near Viborg, and in a beautiful cemetery contiguous rest the remains of English victims of wounds or disease. A recent publication upon the sanatorium shows that the Hald camp was well organised and possessed substantial buildings, and the sensible decision was reached to turn it, when it had served the purposes of its origin, into a hospital for the "Victims of Peace," under which heading are included especially all those who were suffering from diseases induced or aggravated by the war, particularly nervous diseases.

The scheme for the sanatorium was initiated by the Danish Red Cross Society, aided by the State, and the institution is supported by contributions from the county from which the patients are sent to Hald and from the State "Invalids' Rest" and "Sick Pensions" funds. The patients pay at the rate of about £45 a year for their board. The chief affections dealt with are diseases of the joints, of the heart, and of the nervous system, and treatment is aided by the provision of baths of all sorts, massage, actinotherapy, electricity, and heat, the apparatus being of the latest design. The winter climate of Jutland being very severe, the sanatorium has been able to discharge its functions only during seven months of the year; but to enable the work to be unbroken in winter some army huts are being reconditioned, by the provision of double floors and additional outer walls and roofs, the spaces between the old and the new structures being filled with non-conducting peat; central heating, radiators, and hot-water pipes have been installed. The buildings of the sanatorium accommodate some 500 patients, and they are always fully occupied, while on an average 150 patients daily receive special treatment. After-treatment is cared for, the patients on leaving being given full instructions and leaflets telling them how to "carry on" at home. The dietary, when special food is needed, provides six special diets for specified classes of cases. The patients are enjoined to live out of doors as much as possible; walking is encouraged and gentle games, such as croquet, are indulged in by those who are convalescent.



Hald Sanatorium near Viborg, Jutland, Denmark.

"Up to the time of my visit," writes the correspondent who has supplied these notes, "between 11,000 and 12,000 patients had been treated at the sanatorium. There is a staff of four medical men with two lay officials. The superintendent is Dr. Brinck Eliassen and the second-in-command is Dr. Hans Soerensen. So far as a layman can judge, from an extended and intensive tour of inspection, Hald Sanatorium is excellently managed; it is worthy of a visit from any British medical man interested in institutional treatment of this character."

E. W. R.

REPORT OF THE INFANT WELFARE CONFERENCE.

THE report just published of the proceedings of the National Conference on Maternity and Infant Welfare, held last July in the Great Hall of the British Medical Association, contains within its 218 pages the text of all the papers read at the conference, and a full report of the discussions which they provoked. The subjects dealt with are both of a social and medical nature, and include wet-nursing, the incidence of venereal disease in antenatal and postnatal clinics, the results of artificial light treatment for children under school age, and respiratory disease as a factor in infant mortality. The report may be obtained for 2*s.* 6*d.* from the National League for Health, Maternity, and Child Welfare, at Carnegie House, 117, Piccadilly, London, W. 1.

OVALTINE RUSKS.

WE have received from Messrs. A. Wander, Ltd., Manufacturing Chemists, 184, Queen's Gate, London, S.W., and King's Langley, Hertfordshire, where the laboratories and works are situated, specimens of Ovaltine rusks, which are made from pure wheaten flour incorporated with the Ovaltine tonic food beverage which is manufactured from barley malt, milk and eggs. The rusks are convenient in size, crisp, slightly sweet in flavour, and break up easily in the mouth. They should be useful in the feeding of children and infants, especially during the period of dentition. For invalids, toast, trifle, gateau, custard, pudding and other plats can be made from these rusks, and receipts for such preparations are supplied by the makers. The rusks can also be used instead of ordinary biscuits, or they can be served with hot or cold milk, or with cheese. The varied employment claimed for them by the manufacturers seems to us quite justifiable.

SUPERFŒTATION.

THE establishment of pregnancy normally inhibits further ovulation, so that insemination does not result in conception until after the young are born. Cases have been recorded from time to time in which it has been supposed that this rule has been broken. The evidence mostly consists either of the presence of one or more conspicuously small young in a litter of rabbits or pigs, or in the occurrence of two parturitions separated by an interval of a few days. Neither is proof of superfœtation, for the growth of a number of embryos is not always uniform, and the two horns of the uterus are to some extent capable of independent action. Several highly inferential cases of real superfœtation in pigs and sheep are, however, recorded[1] by Mr. A. D. Buchanan Smith, and one in particular seems to be satisfactorily proved. A half-bred ewe was in company with a Wensleydale ram up to Nov. 9th, 1926; she then went to another farm where the only ram was an Oxford Down. On March 7th, 1927, she produced two lambs with the characteristics of the Wensleydale Half-bred cross. On April 14th she lambed again; the lambs were quite unlike those of the previous birth and showed clear signs of an Oxford Down sire. The genetical evidence disposes of the possibility of ova lying dormant for a time after fertilisation as they do in some deer. The interval between the parturitions was 38 days, and as the ovarian cycle in the sheep is about 18 days it seems impossible that the two rams should have fertilised ova discharged at the same œstrous cycle (superfecundation). The conclusion is that ovulation and conception must have taken place during pregnancy, and the evidence seems strong.

[1] Journal of Anatomy, 1927, lxi., 329; lxii., 100.

AN EXTRACT OF VITAMIN B.

THE chemical department of the Institute for Medical Research at Kuala Lumpur undertakes a great variety of work not only in connexion with the Institute itself, but for various departments of Government of the Federated Malay States. In an appendix to the report for 1926 Mr. R. W. Blair describes, in addition to a mass of work in which food and drugs and poisons are prominent, the preparation, by an improved method, of vitamin B extract from rice polishings. Fresh rice polishings of the best quality are sifted from husk and broken rice, and extracted with 20 per cent. alcohol containing 0·1 per cent. of hydrochloric acid; the extract after a week's contact is filtered, concentrated under reduced pressure, further purified, and brought to standard strength. About 4·5 kg. of polishings are worked up daily, and in 1926 over 8600 fluid ounces of extract were prepared for distribution to practitioners, either gratuitously or at the estimated cost of production, for the treatment of beri-beri.

AN UNUSUAL CASE OF LACTATION.

OPINIONS are divided as to the part played by nervous and chemical influence in the initiation of lactation. Endocrinologists hold that hormones formed in the reproductive organs circulate in the blood and stimulate the mammary cells directly. Psychologists lay more emphasis on the signs and sensations of pregnancy causing stimulation of the nerves to the breast through the conscious and unconscious mind. In support of the latter view Dr. W. J. Jago[1] describes an unusual case of lactation in a Soudanese woman, who, though barren, had long wished for a child. Eventually she stole the new-born infant of another woman. This child she nursed at her own breast, which gave a copious supply of milk in spite of the fact that she had never herself been pregnant.

PIGEONS OF THE TEMPLE.

THE *genius loci* who inhabits the Temple has a special influence in promoting good literature. We need only refer to two instances: there is Lamb's well-known essay on the Old Benchers of the Inner Temple in which the particular Elia flavour is most pronounced, and there are all the typical Thackeray passages in Pendennis and in the "Memoirs of Mr. Deuceace," especially Chapter XXX. of the 1849 edition of the former work. The little paper now before us, reprinted from the *Cornhill Magazine* for January, 1921, is written by a medical man, by name Arthur Brebner, who served in the R.A.M.C. during the war, was invalided out of the service, was living in the Temple in 1918, served later as a ship's surgeon, and died from tuberculosis in 1922. The paper is written with a fascinating flavour of Elia and treats of the Temple pigeons as reincarnations of well-known lawyers, both those in real life, such as Blackstone and those of fiction, almost as real, such as Serjeant Buzfuz. Mr. Brebner discourses pleasantly about these birds and their doings, and we think that St. Francis, to whom he refers in his concluding paragraph, would have read the paper with pleasure. We are glad that Mr. Brebner's widow has had the paper reprinted and note that it is to be obtained from Mr. P. Medcalf, the Cloisters, Temple, E.C. 4.

PRESENTS AND "TIPS" IN NURSING HOMES.

To the Editor of THE LANCET.

SIR,—I hope the experience of "Physician's" patient is exceptional. I have been matron of a nursing home for very many years and have always deprecated the giving of valuable presents, whether in money or in kind, to my staff. When consulted by a patient I suggest a box of chocolates or a pair of gloves. It is the recognition of her services, not the value of the gift, that the nurse appreciates. I may add that "Physician" is quite wrong in thinking that it is rich patients that give more liberally. It is the other way about. I am, Sir, yours faithfully,

Nov. 5th, 1927. MATRON.

BANK NOTES AND CHOLERA.

IN North China paper money is used almost exclusively and Dr. H. M. Jettmar[2] thought it worth while to find out how long bank notes contaminated with the cholera vibrio remain a source of infection. A series of bank note slips were contaminated by fingers which had been dipped in a cholera stool. After varying periods of time these slips were put in tubes of peptone water from which, after incubation, further cultures were made. The agglutinability of the vibrios cultured from the infected bank notes was then compared with that of organisms from the original stool. It was found that they remained alive on bank notes for four hours and that they retained the same cultural and serological characteristics as the original strain. Their lives were shortened by lack of moisture on the notes and exposure to sunlight.

[1] Kenya and East Africa Medical Journal, 1927, iv., 114.
[2] National Medical Journal of China, 1927, xiii., 254.

SUPERANNUATION FOR LABORATORY ASSISTANTS.

WE learn with pleasure of a scheme adopted by the London School of Hygiene and Tropical Medicine for the superannuation of technical and laboratory assistants in their employ. Its immediate object is to improve the status of laboratory assistants by placing them on a definite grade and scale of salary, which closely follows the lines of the Federated Superannuation Scheme for Universities. An amount equal to 15 per cent. on the salary, 5 per cent. contributed by the assistant and 10 per cent. by the school, is applied in payment of a yearly insurance premium to secure either an annuity on retirement or a lump sum under an endowment assurance policy. The scheme is optional in the case of salaries from £100 to £160 per annum, and above that it is compulsory. The scheme has been accepted with enthusiasm by the whole of the laboratory staff concerned, which recognises the value of security of tenure and the opportunities of promotion which it ensures, provided that similar arrangements become the rule elsewhere. We confidently predict that other institutions will follow the lead given by the London School.

BLOOD CALCULATIONS.

THE hæmatological nomogram of Dr. E. J. Warburg affords a ready method of calculating the colour index, the volume index, and the saturation index of the red cells of the blood. In addition it will give on slight correction the average diameter of the red cells. Up to the present this nomogram has only been available in the pages of Dr. Warburg's original communication. It has now been published for general use by Levin and Munksgaard, of Copenhagen. As published the nomogram is mounted on a stiff cardboard and provided with a loop by means of which it may be hung on the laboratory wall. It is of convenient size so that by the simple application of a straight edged ruler the desired figures may be read off. The data required for the use of the nomogram consist of the hæmoglobin percentage, the number of red cells per c.mm., and the volume of cells per cent. of blood as determined by the hæmatocrit. The general adoption of this nomogram should save trouble to those engaged in the study of the blood.

THE MODEL ABATTOIR SOCIETY.

THE annual Benjamin Ward Richardson lecture of this Society was delivered on Nov. 10th by Dr. Gerald Leighton, medical officer (foods), Scottish Board of Health, at the Royal Sanitary Institute.

Dr. Leighton said that the problem of the satisfactory public health organisation of the meat supply had been before all modern civilised communities for years past, and all of them had come to certain conclusions which were fundamental. In every country it had been realised that it was necessary to concentrate the slaughtering of food animals in public abattoirs and to make special arrangements for scattered rural districts. It was impossible to maintain an adequate system of inspection in thousands of small private slaughterhouses. All countries had decided that meat inspection should be in the hands of well-trained professional inspectors with a knowledge of comparative pathology and bacteriology. It was also necessary to have a legal code of judgments of morbid conditions affecting animals used for food. Special laws, apart from general food laws, were also required to deal with various phases of the industry. Not the least was it necessary to see that only such methods of slaughtering as were recognised as being consistent with humane methods should be permitted. The essence of humane slaughtering in his opinion was the rapid production of unconsciousness in the animal before the operation of bleeding was performed. Many instruments on the market were satisfactory when used by an expert, but none was satisfactory in the hands of a stupid or careless fool. The point was to get humane killing with a good keeping quality of the dressed carcass.

Public abattoirs had been established in Scotland, said Dr. Leighton, for two generations, and to-day about 92 per cent. of the home-killed meat in Scotland passed through public abattoirs, in which there was a legal system and standard of meat inspection established. In his opinion there was very little cruelty in abattoirs; there was probably far more in the transit of the animals by land and sea, or in the preliminaries before slaughtering. Nor did he think there was any cruelty in the open hall system of abattoirs where the cattle could see all going on around them. What cattle resented was being dragged through narrow passages, into strange places, by unknown people. They would have the same objection to being dragged anywhere. He urged the importance of public abattoirs from the point of view of their teaching facilities for the trade itself in technical matters, and for those qualifying for the position of meat inspectors as well, because they were the only places in which all the by-products of the industry could be profitably dealt with.